DOCUMENT RESUME

ED 042 653 SE 009 802

TITLE	Books on Atomic Energy for Adults and Children, Understanding the Atom Series.
INSTITUTION	Atomic Energy Commission, Oak Ridge, Tenn. Div. of Technical Information.
PUB DATE	69
NOTE	53p.
AVAILABLE FROM	U. S. Atomic Energy Commission, P. O. Box 62, Oak Ridge, Tennessee 37830 (free)
EDRS PRICE	EDRS Price MF-$0.25 HC Not Available from EDRS.
DESCRIPTORS	Adult Education, *Annotated Bibliographies, *Bibliographies, *Booklists, Elementary Education, *Nuclear Physics, *Physics, Secondary Education

ABSTRACT

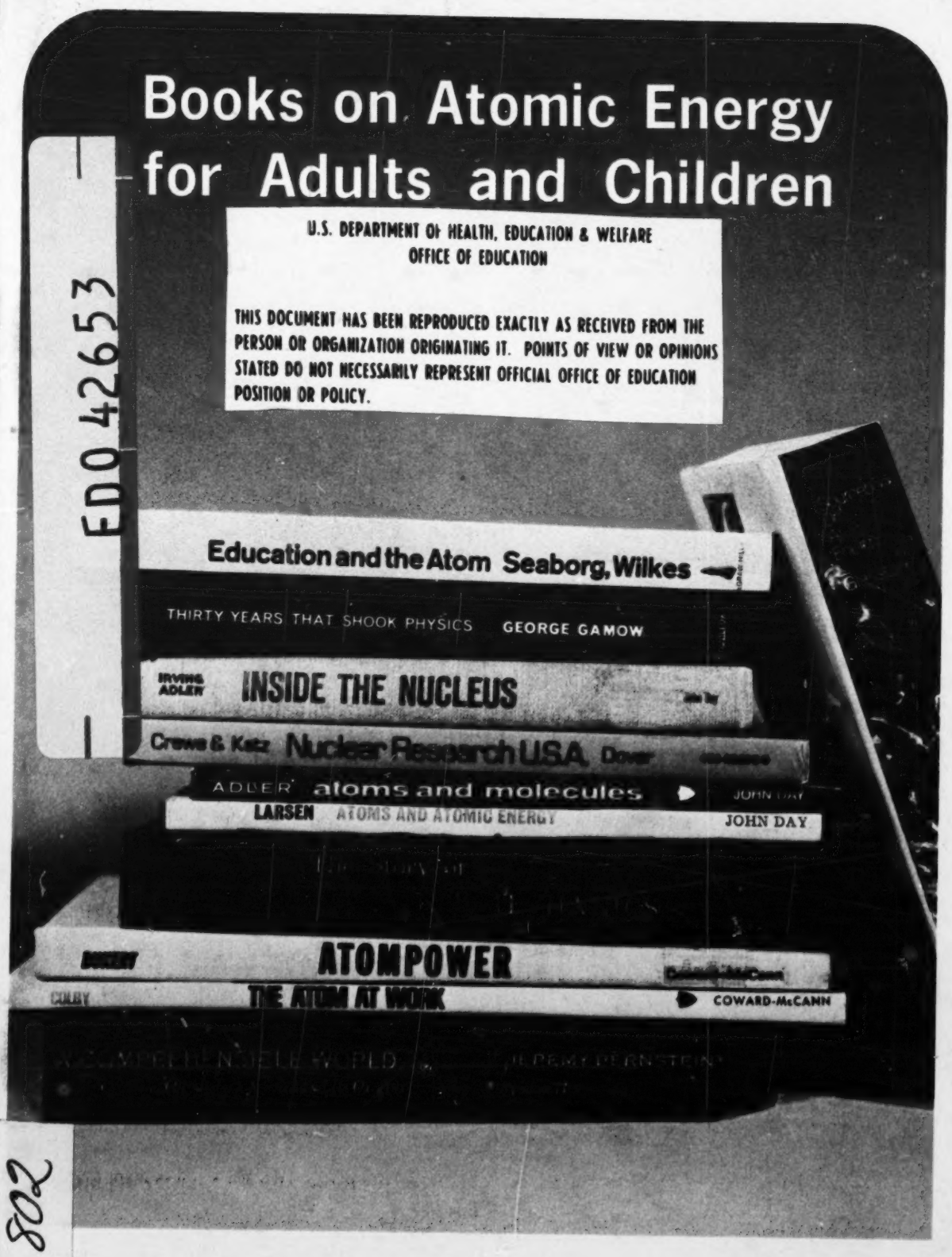
This booklet in the "Understanding the Atom" series includes annotated bibliographies for children (grade level indicated) and adults. Over 100 basic books on atomic energy and closely related subjects are alphabetized by title and an author index. A list of publisher addresses are included. A brief introduction to library usage is given. The booklet is illustrated with photographs of nuclear physicists, research installations and some applications of nuclear power. (AL)

ED042653

Books on Atomic Energy for Adults and Children

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.


Education and the Atom Seaborg, Wilkes
THIRTY YEARS THAT SHOOK PHYSICS GEORGE GAMOW
IRVING ADLER INSIDE THE NUCLEUS
Crowe & Katz Nuclear Research USA Dover
ADLER atoms and molecules JOHN DAY
LARSEN ATOMS AND ATOMIC ENERGY JOHN DAY
ATOMPOWER
COLBY THE ATOM AT WORK COWARD-McCANN

SE 009 802

ATOMIC ENERGY COMMISSION
ion of Technical Information

The Understanding the Atom Series

Nuclear energy is playing a vital role in the life of every man, woman, and child in the United States today. In the years ahead it will affect increasingly all the peoples of the earth. It is essential that all Americans gain an understanding of this vital force if they are to discharge thoughtfully their responsibilities as citizens and if they are to realize fully the myriad benefits that nuclear energy offers them.

The United States Atomic Energy Commission provides this booklet to help you achieve such understanding.

Edward J. Brunenkant

Edward J. Brunenkant, Director
Division of Technical Information

UNITED STATES ATOMIC ENERGY COMMISSION

Dr. Glenn T. Seaborg, Chairman
James T. Ramey
Wilfrid E. Johnson
Dr. Theos J. Thompson
Dr. Clarence E. Larson

ED0 42653

Books on Atomic Energy for Adults and Children

CONTENTS

INTRODUCTION 1

HOW TO OBTAIN INFORMATION IN A LIBRARY 2

BOOKS FOR CHILDREN 5

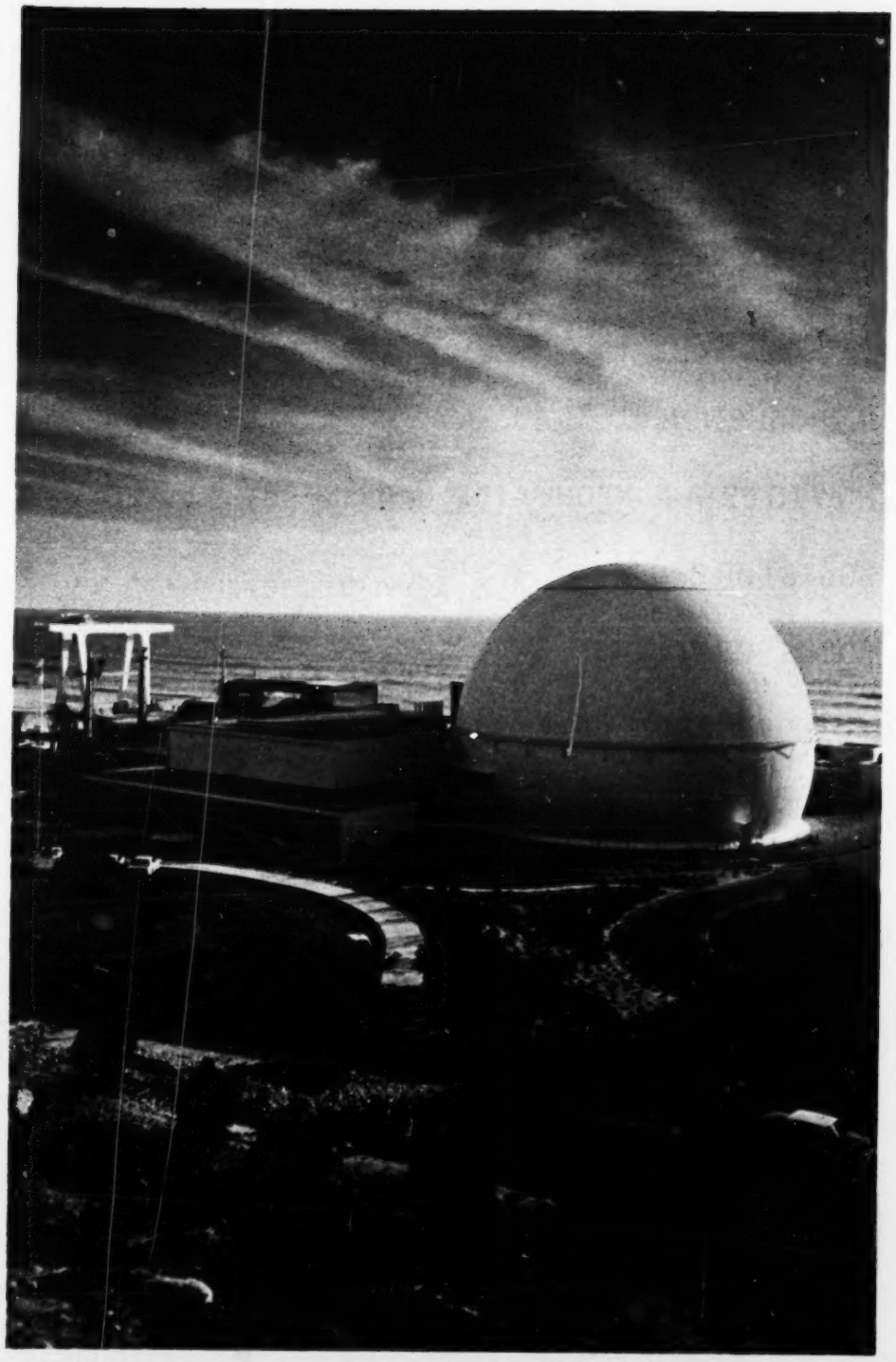
BOOKS FOR ADULTS 21

AUTHOR INDEX 39

PUBLISHERS 45

United States Atomic Energy Commission
Division of Technical Information

Library of Congress Catalog Card Number: 77-602521
1969



The San Onofre Nuclear Generating Station near San Clemente, California, has a net electrical capacity of 430,000 kilowatts and began commercial operation in 1967.

Introduction

This booklet contains two lists of atomic energy books—one for students and one for adults. The student list has grade annotations. The lists are not all-inclusive but comprise selected basic books on atomic energy and closely related subjects.

Those books marked OP (out of print) can in most cases be obtained through libraries.

The books are alphabetized by title, and an author index begins on page 39. A list of publishers' addresses begins on page 45.

This booklet is one of the Understanding the Atom series; others are listed on the inside back cover, along with information on how to obtain them. Each of the other booklets contains a list of references specifically related to its subject matter, including books, reports, articles, and motion pictures; the references on the pages that follow do not duplicate those in the other booklets, except for a few titles of a general nature.

The SNAP-3A generator (white ball at bottom), attached to a satellite to provide energy for the satellite's transmitters, was the first use of atomic power in space. Launched in 1961 with a design life of 5 years, SNAP-3A is still operating. (SNAP is an acronym for Systems for Nuclear Auxiliary Power.)

How to Obtain Information in a Library

Persons seeking information on nuclear energy can find many other sources in public or school libraries. The library card catalogue contains an alphabetical list of books filed by author's last name, title, and subject. Each card will have a call number in one corner. This number is usually derived from the Dewey Decimal System, which classifies books in the following way:

000 General Works
100 Philosophy
200 Religion
300 Social Sciences; Sociology
400 Linguistics
500 Pure Science
600 Applied Sciences
700 Arts and Recreation
800 Literature
900 History

Books on nuclear physics would be found in the 530 group, which is the physics classification.

The *Subject Guide to Books in Print*, revised annually, is a good supplement to the card catalogue. This guide is especially helpful since its headings are broken down. For example, under Atomic Energy, one finds subheadings such as Dictionaries, Economic Aspects, History, International Control, etc.

Encyclopedias provide a good starting point in an information search. The *Encyclopedia Americana* has 8 text pages under Atomic Energy in addition to a glossary, cross references, and bibliography.

The *Reader's Guide to Periodical Literature*, issued monthly, lists articles by subject and author from 126 periodicals. (Titles are given only for works of fiction.)

Periodicals such as *Science*, *Scientific American*, *Science Digest*, *Popular Science*, and *Science News* are often sources of nuclear energy articles. The first two issue indexes.

Good general guides to information are:

Basic Tools of Research. Philip H. Vitale. 1963. 173 pp. Barron's, $3.95 (hardback); $1.95 (paperback).

Books, Libraries, and You. (3rd edition). Jessie Boyd, Leo B. Baisden, Carolyn Mott, and Gertrude Memmler. 1965. 205 pp. Scribner's, $3.60.

Children's Book on How to Use Books and Libraries. (revised edition). Carolyn Mott and Leo B. Baisden. 1961. 207 pp. Scribner's, $2.96.

The First Book of Facts and How to Find Them. David C. Whitney. 1966. 72 pp. Watts, $2.65. Grades 4-6.

How and Where to Look It Up: A Guide to Standard Sources of Information. Robert W. Murphey. 1958. 721 pp. McGraw-Hill, $16.50.

How to Find Out. (2nd edition). George Chandler. 1966. 198 pp. Pergamon, $4.50. (Third edition in preparation.)

The following bibliographies are also useful:

A Guide to Science Reading. (revised edition). Hilary J. Deason, compiler and editor. 1966. 288 pp. New American Library, $0.75.

The AAAS Science Book List for Young Adults. Compiled under the direction of Hilary J. Deason. 1964. 250 pp. AAAS, $3.50 (hardback); $2.50 (paperback). OP.

PHOTO CREDITS

Frontispiece, Southern California Edison Company; 4, Stanford University; 8, U. S. Navy; 11, Brookhaven National Laboratory; 12, Westinghouse Electric Corporation; 15, Argonne National Laboratory; 16, Willard F. Libby; 19, Martin-Marietta Company; 20, National Rocket Development Station; 23, Argonne National Laboratory; 24, Lawrence Radiation Laboratory; 27, Lotte Jacobi; 28 (top) Mary E. Weeks, *Discovery of the Elements,* Chemical Education Publishing Company; 31, Brookhaven National Laboratory; 32, American Institute of Physics; 35 and 36, Lawrence Radiation Laboratory; 44, General Atomic Division, General Dynamics Corporation.

An aerial view of the 2-mile electron accelerator at Stanford University in California, and the experimental buildings and other facilities required for the scientists, engineers, and other workers, who study the fundamental nature of matter.

Books for Children

Accelerators: Machines of Nuclear Physics. Robert R. Wilson and Raphael Littauer. 1960. 196 pp. Doubleday, $1.45.

Explains the most common types of accelerators, the history of their development and the way in which each type contributes to nuclear physics.
Grades 9-12.

The Atom and Beyond: A New Introduction to Modern Physical Science. E. Sheldon Smith. 1965. 160 pp. Bantam, $0.75.

Principles and concepts of atomic science are defined. Included are the electrical nature of matter, the discovery of the electron and the nucleus, the meaning of quantum mechanics, wave theory of the atom, the nature of chemical bonding, the uncertainty principle, gas laws and ideal gases, and the geometry of molecules.
Grades 10-12.

The Atom at Work: How Nuclear Power Can Benefit Man. C. B. Colby. 1968. 48 pp. Coward-McCann, $2.97.

A picture book of peaceful applications of atomic energy. Each application is illustrated by one or more photographs and described in a brief paragraph.
Grades 4-8.

Atomic Energy. Irene D. Jaworski and Alexander Joseph. 1961. 218 pp. Harcourt, $4.95.

Describes the nature and structure of the atom and presents many safe home experiments, such as producing and controlling an electron beam, photographing alpha tracks, observing scintillations, making a reactor model, and constructing a Van de Graaff generator.
Grades 8-12.

Atomic Submarines. William R. Anderson, James Baar, and William E. Howard. 1968. 63 pp. Childrens Press, $3.95.

A lavishly illustrated history of nuclear submarines. William Anderson was the captain of the *Nautilus*, the first atomic submarine.
Grades 4-8.

Atompower. Joseph M. Dukert. 1962. 127 pp. Coward-McCann, $3.50.

Explains nuclear energy and how it is used. Atomic submarines and surface ships, reactors, nuclear space vehicles, peaceful atomic explosions, and radioisotope use in industry, medicine, and agriculture are described in words and pictures. A glossary is appended.
Grades 5-8.

Atoms. Melvin Berger. 1968. 46 pp. Coward-McCann, $3.29.

A simple book for young children.
Grades 1-3.

Atoms Afloat: The Nuclear Ship *Savannah*. Edward and Ruth S. Radlauer. 1963. 124 pp. Abelard-Schuman, $3.00.

The construction and operation of the NS *Savannah* are explained in simple language. Good photographs and a glossary are included.
Grades 7-11.

Atoms and Atomic Energy. Egon Larsen. 1963. 48 pp. Day, $2.50.

A simply written history of nuclear energy with special sections on nuclear power and isotopes.
Grades 4-6.

Atoms and Molecules. Irving and Ruth Adler. 1966. 48 pp. Day, $2.68.

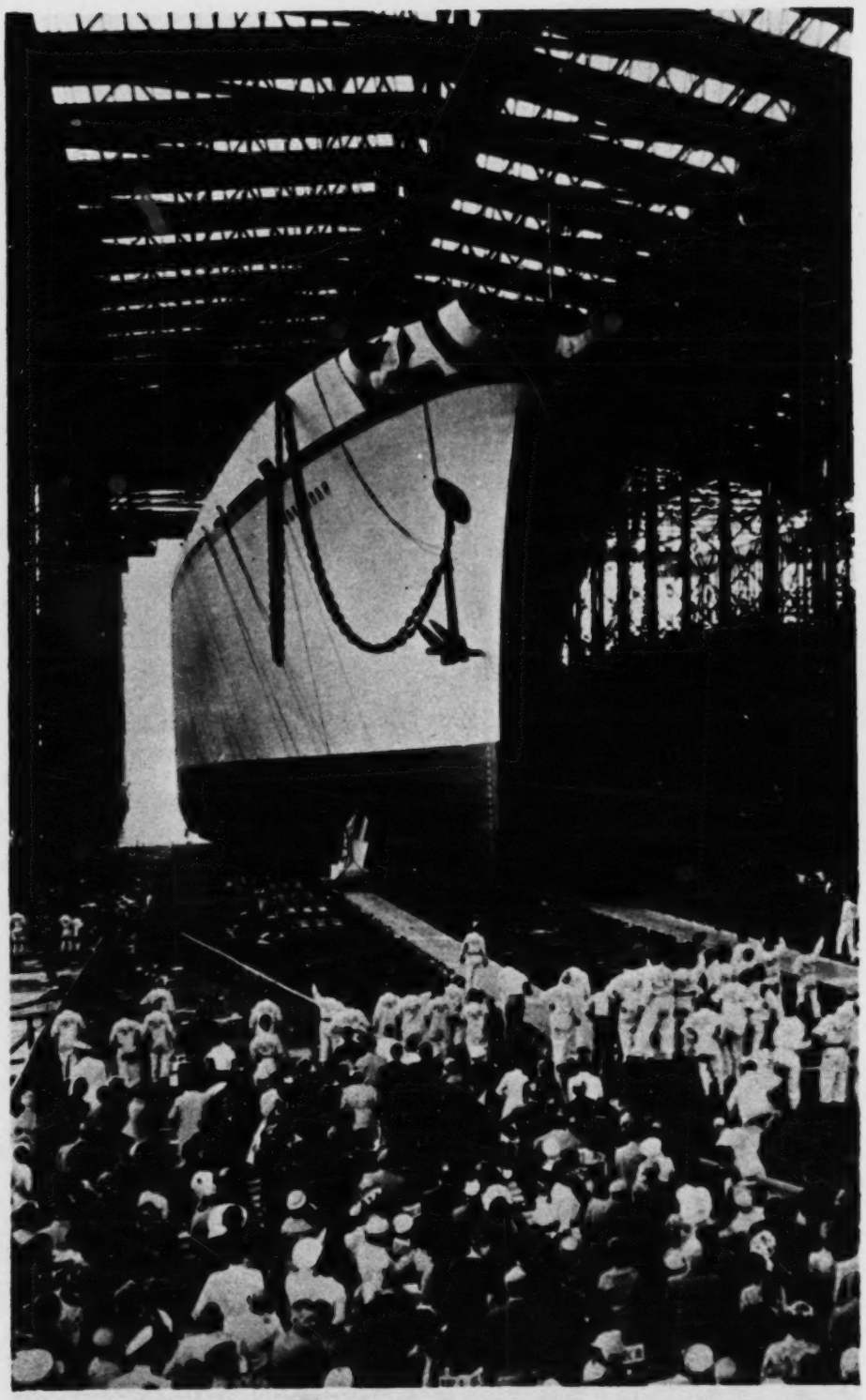
An elementary introduction to nuclear energy principles.
Grades 3-6.

Atoms Today and Tomorrow. (3rd edition). Margaret O. Hyde. 1966. 160 pp. McGraw-Hill, $3.50.

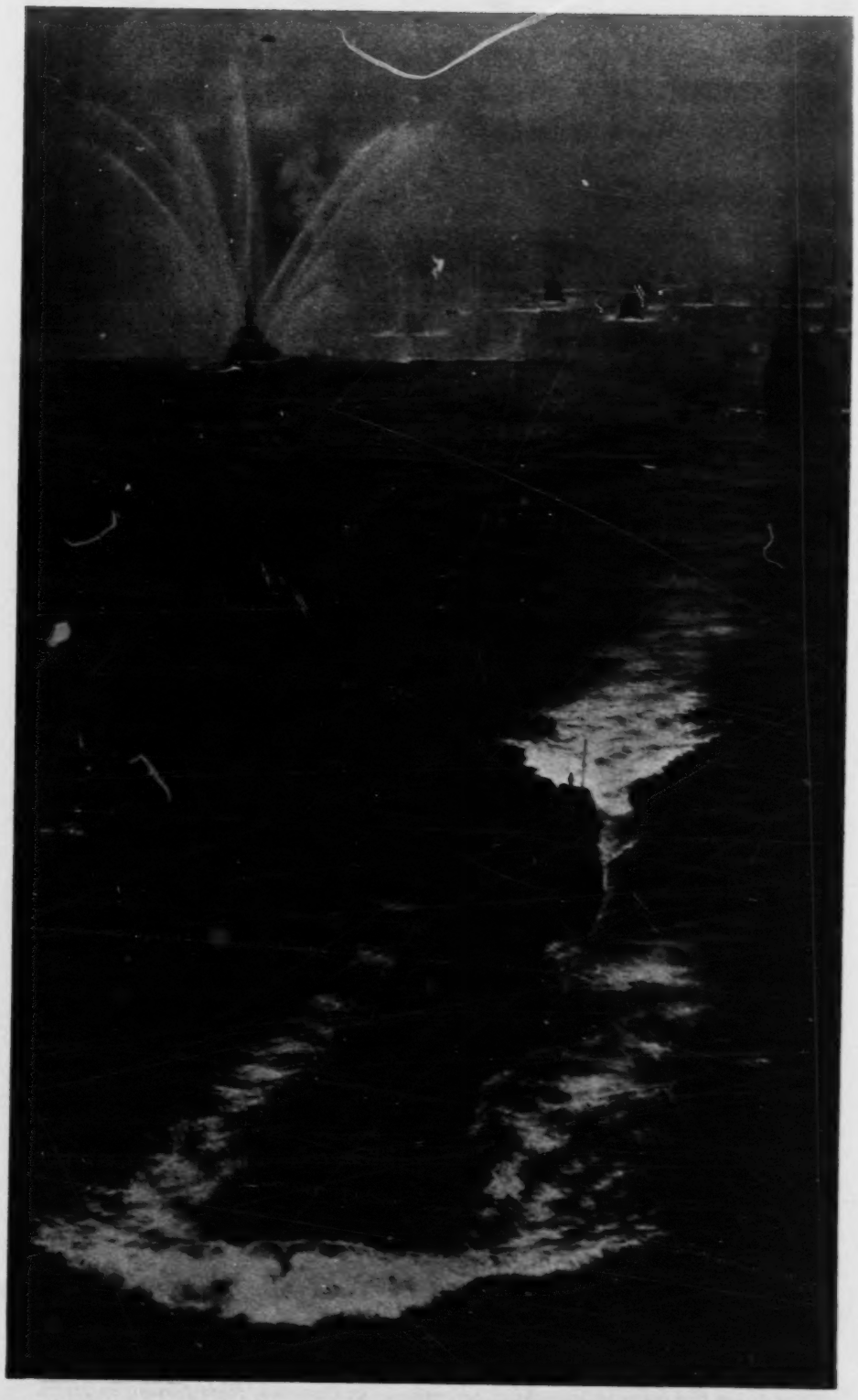
Describes applications of atomic energy in agriculture, industry, and medicine. Radioactivity and its control and the effect of bomb tests on the weather are also examined.
Grades 7-11.

Basic Laws of Matter. (revised edition). Harrie S. W. Massey and Arthur R. Quinton. 1965. 178 pp. Herald, $3.75.

A nontechnical presentation of atoms and the laws governing their behavior.
Grades 7-9.



The NS **Savannah,** *the first cargo-passenger ship to be driven by nuclear power, slides down the ways at launching ceremonies in Camden, New Jersey, in 1959.*



The USS Nautilus, *the first atomic submarine, is escorted into New York harbor after her voyage under the arctic ice cap in 1958.*

The Book of the Atom. Leonard De Vries. 1960. 268 pp. Macmillan, $3.95.

A popular account of atomic theory tracing various scientific discoveries that culminated in the final isolation of the atom.
Grades 7-9.

Building Blocks of the Universe. (revised edition). Isaac Asimov. 1961. 380 pp. Abelard-Schuman, $3.50 (hardback); Hale, $2.70 (paperback).

A comprehensive and interesting discussion of the elements.
Grades 8-12.

Discoverer of X Rays: Wilhelm Conrad Roentgen. Arnulf K. Esterer. 1968. 191 pp. Messner, $3.50.

This interesting biography includes a brief, but very helpful, pronouncing gazetteer of the German, Swiss, and Dutch names in the text.
Grades 7-10.

Discovery of the Elements. (6th edition). Mary E. Weeks. 1956 910 pp. Chemical Education, $10.00.

A well-illustrated history of the chemistry of the elements.
Grades 9-12.

The Discovery of the Elements. Willy Ley. 1968. 256 pp. Delacorte, $4.95.

An historical survey of the discovery of the elements.
Grades 7-9.

Elements of the Universe. Glenn T. Seaborg and Evans G. Valens. 1958. 253 pp. Dutton, $4.95 (hardback); $2.15 (paperback).

How transuranium elements were discovered, their position in the periodic table, and predictions of further discoveries.
Grades 6-9.

Enrico Fermi: Atomic Pioneer. Doris Faber. 1966. 86 pp. Prentice-Hall, $3.50.

A biography of the man who built the first reactor.
Grades 5-8.

Experiments in Nuclear Science. Grafton D. Chase, Stephen Rituper, and John W. Sulconki. 1964. 167 pp. Burgess, $3.50; teacher's guide, $2.45.

A manual of 54 experiments that demonstrate the fundamentals and some of the applications of nuclear energy.
Grades 8-12.

Experiments With Atomics. (revised edition). Nelson F. Beeler and Franklyn M. Branley. 1965. 160 pp. Crowell, $3.50.

This well-written and well-illustrated book gives directions for conducting experiments and building with ordinary materials an assortment of nuclear devices.
Grades 5-8.

The Fabulous Isotopes: What They Are and What They Do. Robin McKown. 1962. 189 pp. Holiday, $4.50.

The theory of radioisotopes and how they are used in laboratories, hospitals, and on farms.
Grades 7-10.

Giant of the Atom: Ernest Rutherford. Robin McKown. 1962. 191 pp. Messner, $3.50.

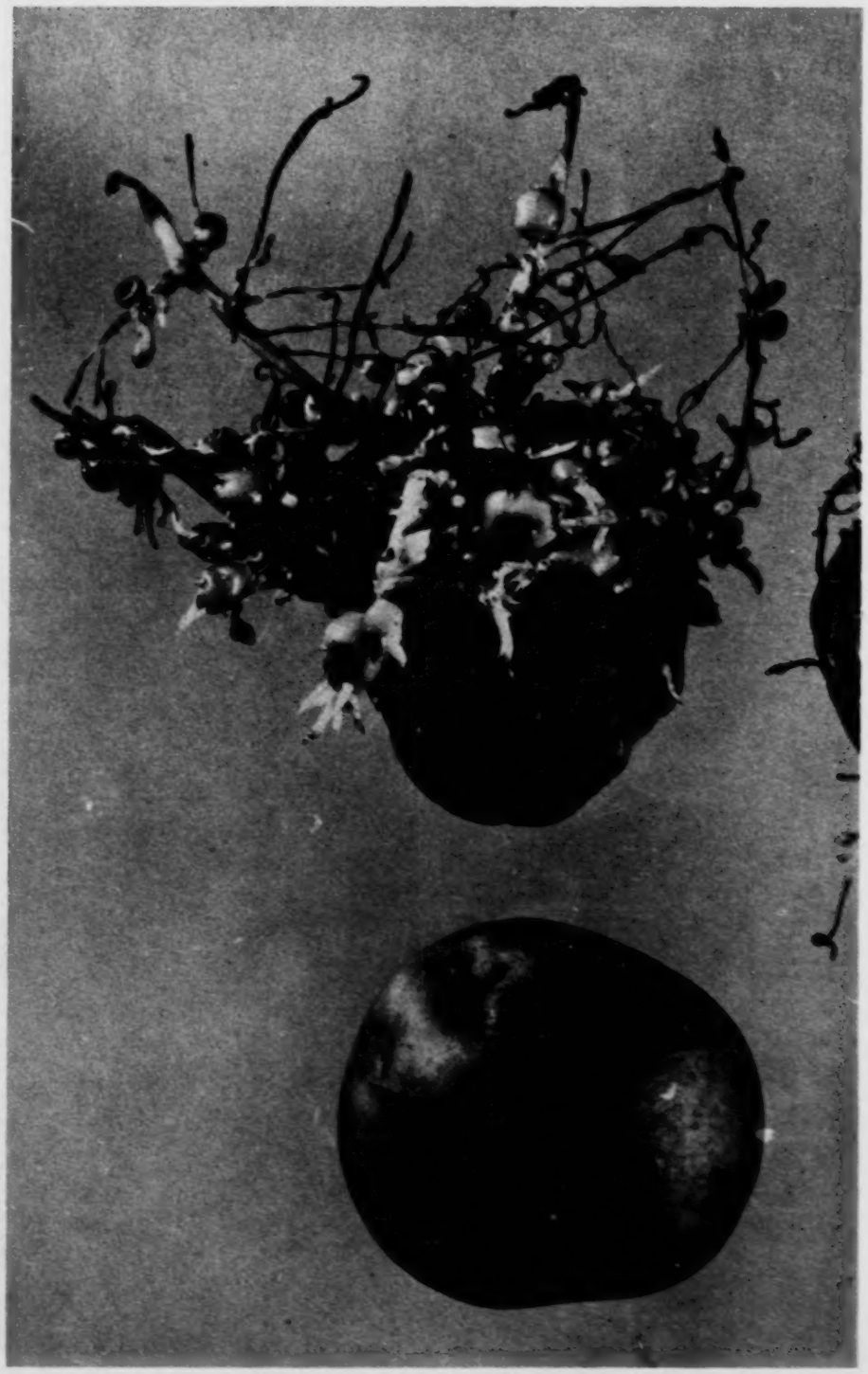
The life and accomplishments of a great scientist.
Grades 7-12.

The History of the Atomic Bomb. Michael Blow. 1968. 150 pp. American Heritage, $4.95.

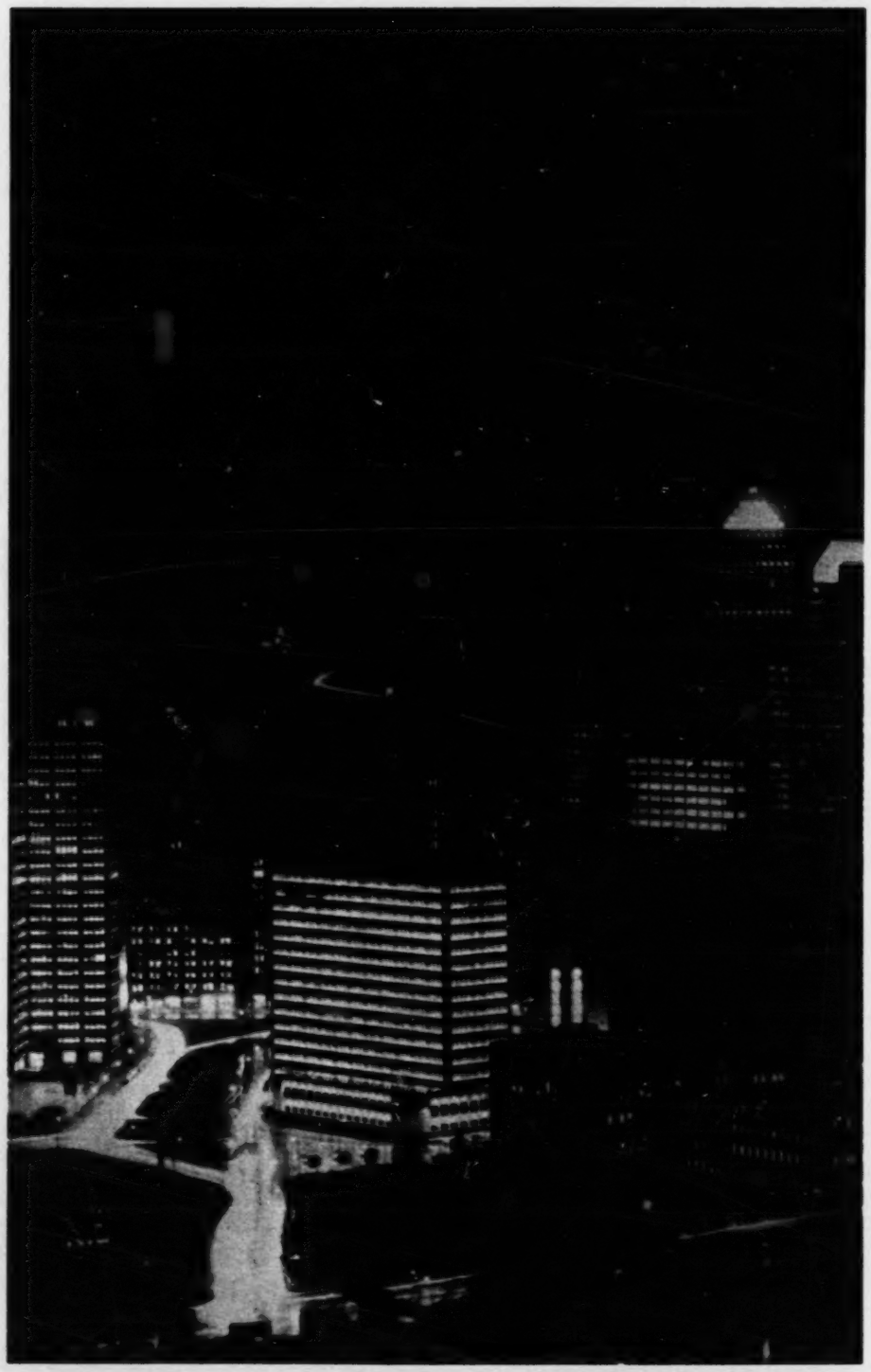
This sumptuously illustrated history provides an informative explanation of nuclear physics in addition to comprehensive coverage of the bomb's development and use.
Grades 5-9.

Inside the Atom. (revised edition). Isaac Asimov. 1966. 197 pp. Abelard-Schuman, $4.00.

This comprehensive, well-written text explains nuclear energy and its applications.
Grades 7-10.



The striking effect of radiation in preserving foods is demonstrated above. The bottom potato was exposed to 20,000 rads of gamma radiation; the top one was not treated. Both were stored for 16 months and then this picture was taken. The irradiated potato was still firm, fresh-looking, edible, and had no sprouts.



The lights of downtown Pittsburgh. The Shippingport Atomic Power Station, the first full-scale, nuclear-electric station built exclusively for civilian needs, provides electricity for the homes and factories of the greater Pittsburgh area. The station began commercial operation in 1957.

Introducing the Atom. Roslyn Leeds. 1967. 224 pp. Harper, $3.95.

This story of nuclear energy and its applications is supplemented by a biographical section on nuclear physicists, a glossary of terms, and a bibliography.
Grades 7-9.

Let's Go To An Atomic Energy Town. Kirk Polking. 1968. 46 pp. Putnam, $1.97.

A nuclear reactor provides power for the "atomic energy town" of the title. A good explanation of how and why a nuclear power plant works is followed by descriptions of other peaceful uses of nuclear energy. A glossary, reference list, and a list of projects are appended.
Grades 3-6.

Men Who Mastered the Atom. Robert Silverberg. 1965. 193 pp. Putnam, $3.30.

Atomic energy history is told through the work of pioneer scientists from Thales to present-day researchers.
Grades 7-9.

Molecules and Atoms. Edward Victor. 1963. 32 pp. Follett, $1.00.

An exploration of the structure of matter.
Grades 2-6.

Mr. Tomkins Explores the Atom. George Gamow. 1945. 97 pp. Cambridge, $2.95.

The author uses the comic adventures of a fictional character to explain nuclear energy. Mr. Tomkins discovers molecular motion, the intricacies of the electron, and the principles of the cyclotron in his search for the perfect gambling system.
Grades 7-9.

The Neutron Story. Donald J. Hughes. 1959. 158 pp. Doubleday, $1.25.

A substantial and interesting account of neutron physics.
Grades 7-9.

Niels Bohr: The Man Who Mapped the Atom. Robert Silverberg. 1965. 189 pp. MacRae, $3.75.

An exciting, suspenseful, and humorous biography of one of the pioneers in atomic energy. Includes a glossary and references.
Grades 8-12.

The Noble Gases. Isaac Asimov. 1966. 171 pp. Basic Books, $4.50.

An historical account of the noble gases, which, until 1962, could not be made to combine chemically with each other or with other elements.

Grades 8-12.

Nuclear Physics and the Fundamental Particles. H. H. Heckman and P. W. Starring. 1963. 410 pp. Holt, $2.60. OP.

A nonmathematical textbook written for high school students. The basic science of the nucleus is stressed.

Grades 10-12.

Our Friend the Atom. Heinz Haber. 1957. 165 pp. Golden Press, $4.95 (hardback) OP; Dell, $0.35 (paperback).

Atomic history and theory are presented and dramatically illustrated, using the old fairy tale of the Fisherman and the Genie as an introduction.

Grades 7-9.

The Peaceful Atom. Bernice Kohn. 1963. 72 pp. Prentice-Hall, $3.50.

The birth of atomic energy, early experiments to harness it, its present uses, and its fabulous future.

Grades 4-6.

Peacetime Uses of Atomic Energy. (revised edition). Martin Mann. 1961. 191 pp. Viking Press, $5.00 (hardback); $1.65 (paperback).

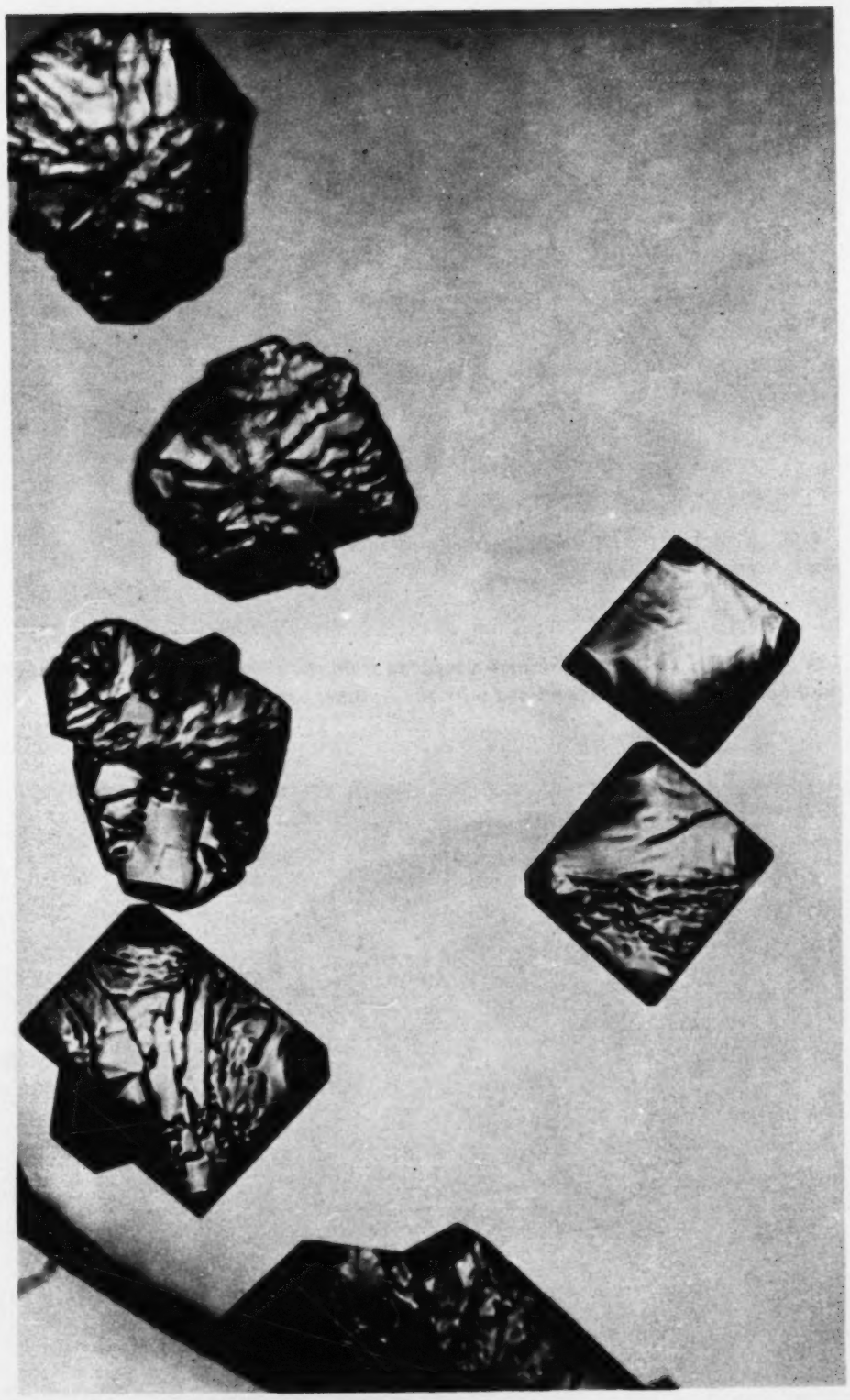
A well-illustrated, nontechnical introduction to atomic energy for high school science students. Includes a useful glossary.

Grades 9-12.

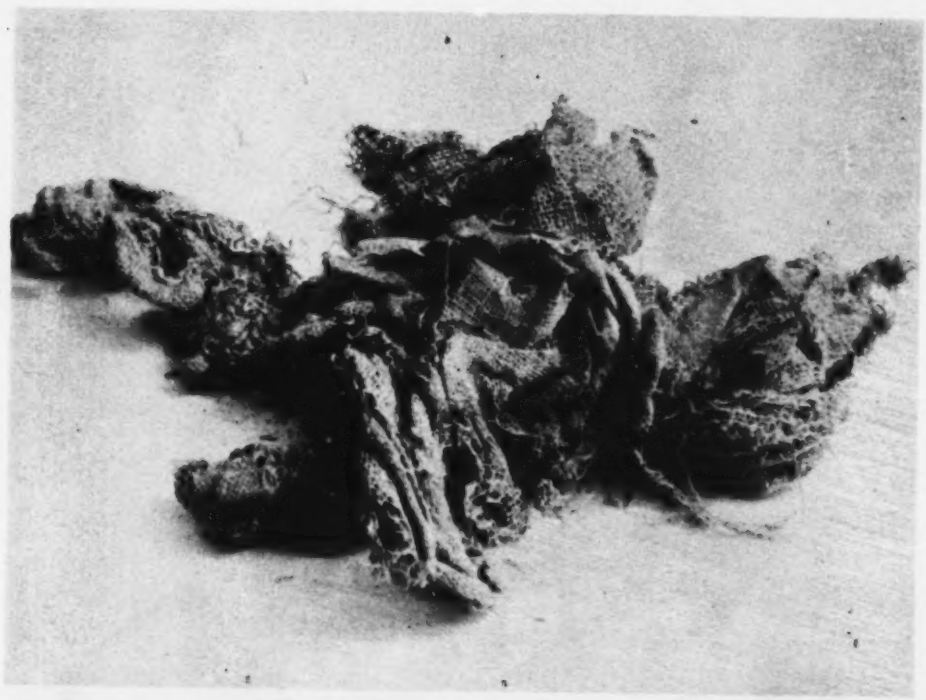
The Questioners: Physicists and the Quantum Theory. Barbara Lovett Cline. 1965. 274 pp. Crowell, $5.00; New American Library, $0.75 (paperback) with the title **Men Who Made a New Physics: Physicists and the Quantum Theory.**

An exceptionally well-delineated and personable account of the development of the quantum theory by physicists in the first quarter of this century.

Grades 9-12.



Crystals of xenon tetrafluoride created in the experiment that first combined one of the noble gases with another element in 1962.



The age of this 1000-year-old linen wrapping from the Dead Sea Scroll containing the Book of Isaiah was determined with the isotope, carbon-14.

This 9000-year-old rope sandal, one of a pair of 300 pairs found in an eastern Oregon cave, was also dated with carbon-14.

Radioactivity: Fundamentals and Experiments. Sister Mary Hermias and Sister Mary Joecile. 1963. 209 pp. Holt, $2.30.

Fifty-one experiments for the enrichment of high school courses in biology, chemistry, and physics.
Grades 8-12.

Radioisotopes. John H. Woodburn. 1962. 128 pp. Lippincott, $3.50.

The broad spectrum of radioisotope use is presented—ranging from determining the age of the Dead Sea Scrolls to locating a brain tumor.
Grades 7-10.

The Restless Atom. Alfred Romer. 1960. 198 pp. Doubleday, $1.25.

A stimulating nonmathematical account of the classic early experiments that advanced knowledge about atomic particles.
Grades 9-12.

Roads to Discovery. Ralph E. Lapp. 1960. 191 pp. Harper, $3.95.

Historical survey of nuclear physics beginning with Roentgen's discovery of X rays and concluding with the discoveries of the rare elements.
Grades 10-12.

Rutherford and the Nature of the Atom. Edward N. da C. Andrade. 1964. 218 pp. Peter Smith, $3.25 (hardback); Doubleday, $1.25 (paperback).

Andrade was one of Rutherford's assistants at the University of Manchester when he conducted his investigations of radioactivity that won him the Nobel Prize in 1908.
Grades 10-12.

Secret of the Mysterious Rays: The Discovery of Nuclear Energy. Vivian Grey. 1966. 120 pp. Basic Books, $3.95.

This outstanding history of nuclear research from Roentgen to Fermi is dramatically presented. The uncertainty of the unknown, the accidental discovery and the often lengthy and tedious research are woven into a fascinating tale. The international aspect of science is revealed in this story of scientists from around the world who pooled their knowledge and experience to unlock "the secrets of the mysterious rays".
Grades 4-8.

Secrets of the Nucleus. Joseph S. Levinger. 1967. 127 pp. McGraw-Hill, $2.95; NSTA, $0.50 (paperback).

This introduction to nuclear energy includes science projects and experiments.
Grades 9-12.

Superpower: The Story of Atomic Energy. (revised edition). Frank Ross, Jr. 1960. 183 pp. Lothrop, $3.50.

This popular narrative concerns development of the first sustained nuclear chain reaction and of the subsequent developments to use atomic energy in war, research, and industry.
Grades 8-12.

The Useful Atom. William R. Anderson and Vernon Pizer. 1966. 185 pp. World, $5.75.

An interesting and well-illustrated account of atomic energy from Democritus through the development of SNAP reactors. Anderson was captain of the first atomic submarine, the *Nautilus.*
Grades 7-12.

Wilhelm Röntgen and the Discovery of X Rays. Bern Dibner. 1968. 149 pp. Watts, $2.95.

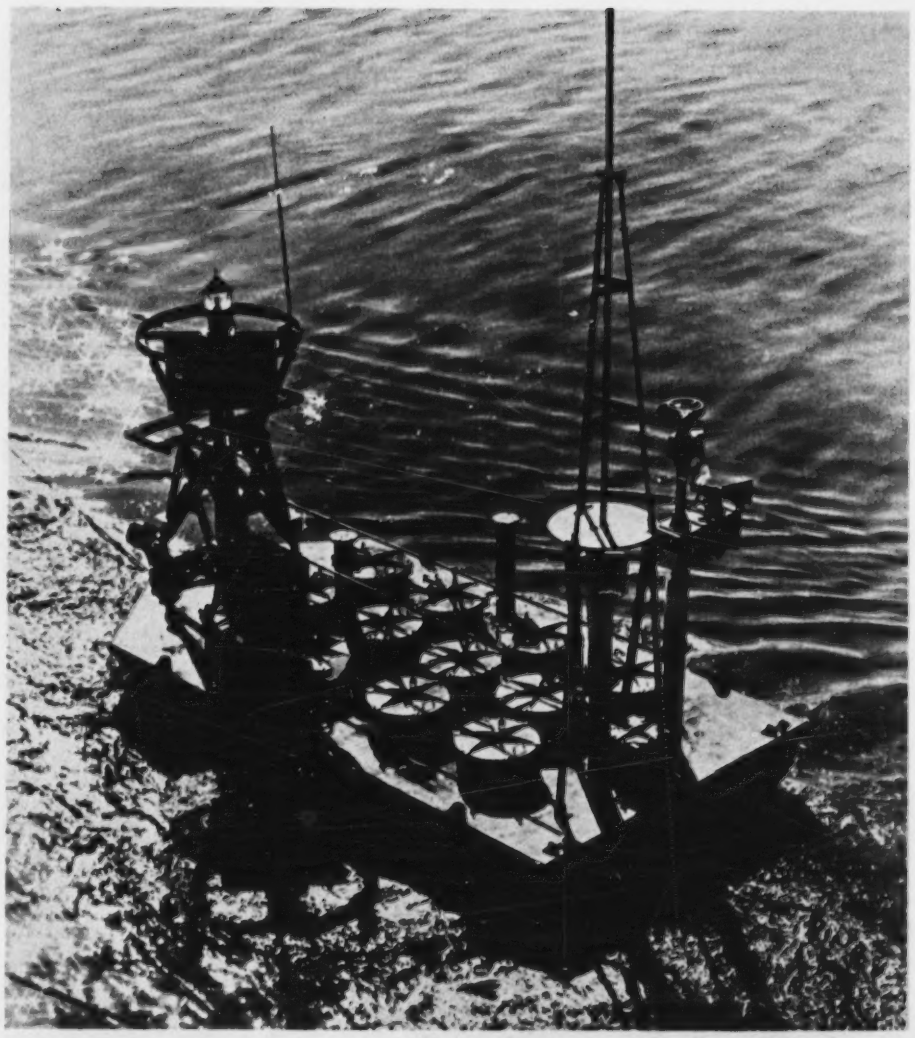
This detailed biography, illustrated with line drawings, historical photographs and papers, is a fine addition to Watts' "Immortals of Science" Series.
Grades 5-8.

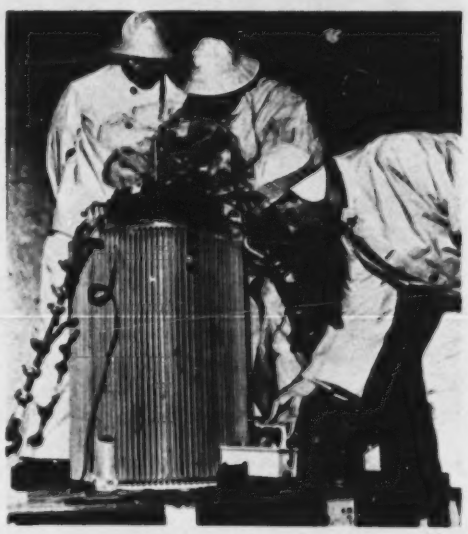
Working with Atoms. Otto R. Frisch. 1965. 96 pp. Basic Books, $3.50.

Dr. Frisch presents a history of nuclear energy research and provides experiments for the reader. He gives a personal account of the pioneering work in which he and Lise Meitner explained the splitting of uranium and introduced the term "nuclear fission".
Grades 9-12.

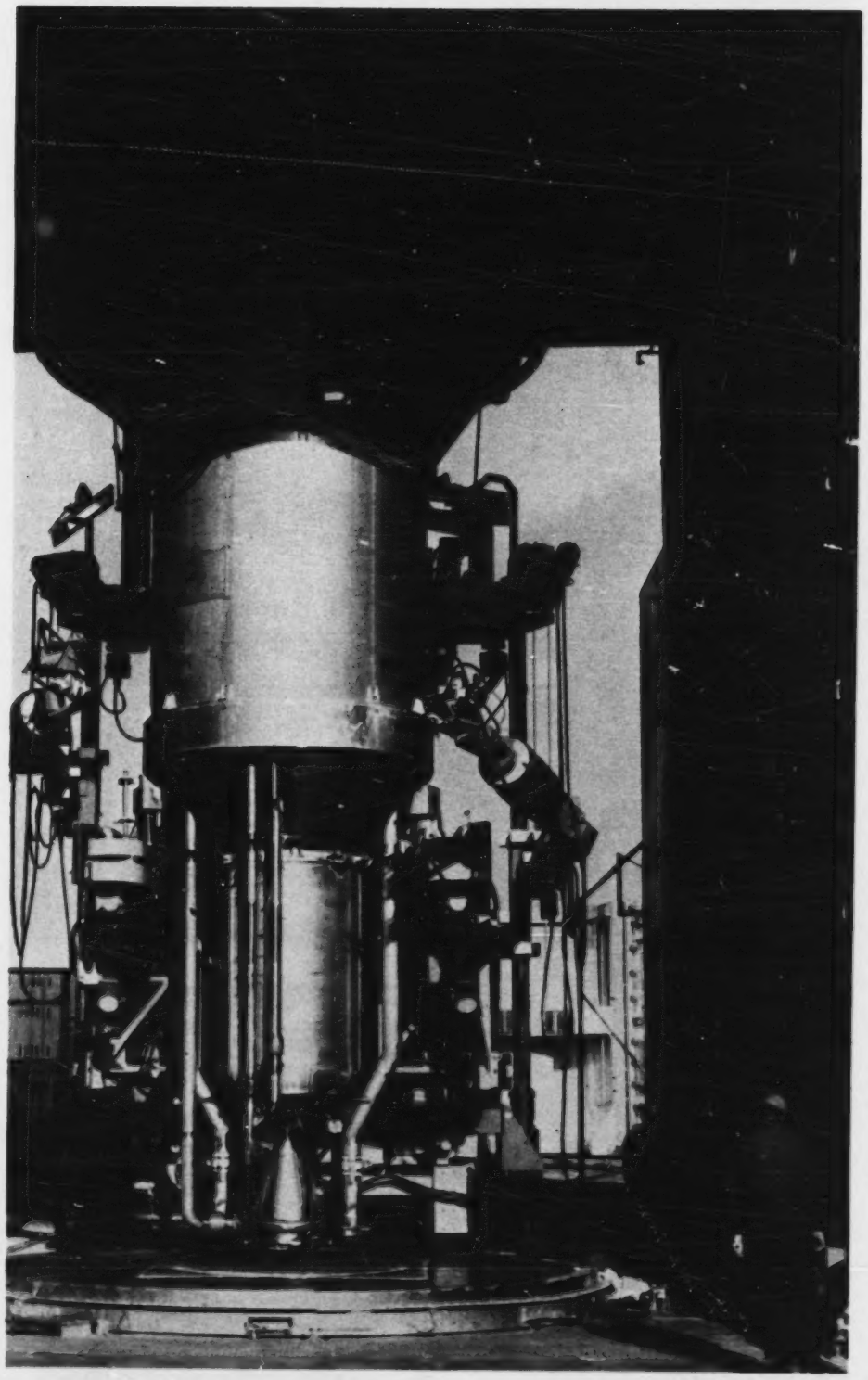
Young People's Book of Atomic Energy. (6th edition). Robert D. and Robert C. Potter. 1967. 202 pp. Dodd, $3.75.

This book provides a history of and an introduction to nuclear energy. About half of the text covers current peaceful applications while the other half is devoted to explanations of atomic energy principles and history.
Grades 7-9.





Above is the first nuclear-powered weather buoy located in the center of the Gulf of Mexico. This weather station, part of the U. S. Navy's NOMAD system, is on a barge 10 feet x 20 feet, and is anchored in 12,000 feet of water. On the right, engineers prepare to install the SNAP-7D generator. (NOMAD is an acronym for Navy Oceanographic Meteorological Automatic Device.)



Model of an advanced NERVA rocket engine that will produce 60,000 to 70,000 pounds of thrust and approximately 1500 megawatts of power. (NERVA is an acronym for Nuclear Engine for Rocket Vehicle Application.)

Books for Adults

Anyone Can Understand the Atom. Henry Bentinck. 1965. 134 pp. Roy, $4.50.

This text, couched in a question and answer form, provides a simple explanation of nuclear energy and its applications.

The Architecture of Matter. Stephen Toulmin and June Goodfield. 1962. 399 pp. Harper, $2.45.

Scientific and philosophic concepts concerning the physics, chemistry, and physiology of matter from the beginning of scientific research are presented eloquently.

The Atom and Its Nucleus. George Gamow. 1961. 153 pp. Prentice-Hall, $1.95.

A popular-level discussion of nuclear structure and the applications of nuclear energy.

The Atomic Energy Deskbook. John F. Hogerton. 1963. 673 pp. Reinhold, $11.00.

A one-volume encyclopedia prepared for nonspecialists. The entries, arranged alphabetically, range from simple explanation to treatment in depth.

Atomic Energy Encyclopedia in the Life Sciences. Charles W. Shilling, editor and major contributor. 1964. 474 pp. Saunders, $10.50.

This source book combines the features of a dictionary and an encyclopedia. It is designed to be of value to the medical and biological professions and as a quick reference work for researchers, teachers, administrators, and students. Its alphabetically arranged entries vary from concise definitions to journal-length articles.

Atomic Energy for Military Purposes. Henry D. Smyth. 1945. 308 pp. Princeton, $4.00.

A complete account of the wartime project that developed the first nuclear weapons and of the considerations that prompted their use.

Atomic Physics and Human Knowledge. Niels Bohr. 1958. 101 pp. Wiley, $3.95 (hardback); $1.45 (paperback).

This collection of addresses and articles is a valuable contribution to the philosophy of atomic physics.

Atomic Quest. Arthur H. Compton. 1956. 370 pp. Oxford, $6.50.

A personal narrative of the research that led to the release of atomic energy on a useful scale by a scientist who played a principal part in the atomic bomb project during World War II.

Atomic Shield, 1947/1952. Volume II—History of the United States Atomic Energy Commission. Richard G. Hewlett and Francis Duncan. 1969. 716 pp. Pennsylvania, $11.95. (This book and **The New World 1939/1946** are available as a boxed set for $17.95.)

A comprehensive history of the development of atomic energy in the United States from the transfer of the government's atomic energy program to the AEC on January 1, 1947, until the end of 1952.

The Atomists (1805-1933). Basil Schonland. 1968. 198 pp. Oxford, $5.60.

This book, which can be understood by anyone who has had a high school physics course, presents atomic theory development from Dalton through Bohr. It achieves a good balance between popular treatments and highly technical works without slighting the technical aspects.

Atoms for Peace. (revised edition). David O. Woodbury. 1965. 275 pp. Dodd, $4.50.

A nontechnical introduction to atomic energy applications, including nuclear power and radioisotope use.

Atoms in the Family: My Life with Enrico Fermi. Laura Fermi. 1954. 267 pp. Chicago, $5.00 (hardback); $1.95 (paperback).

Laura Fermi writes about her husband, Enrico Fermi, the physicist who led the group that built the first nuclear reactor.

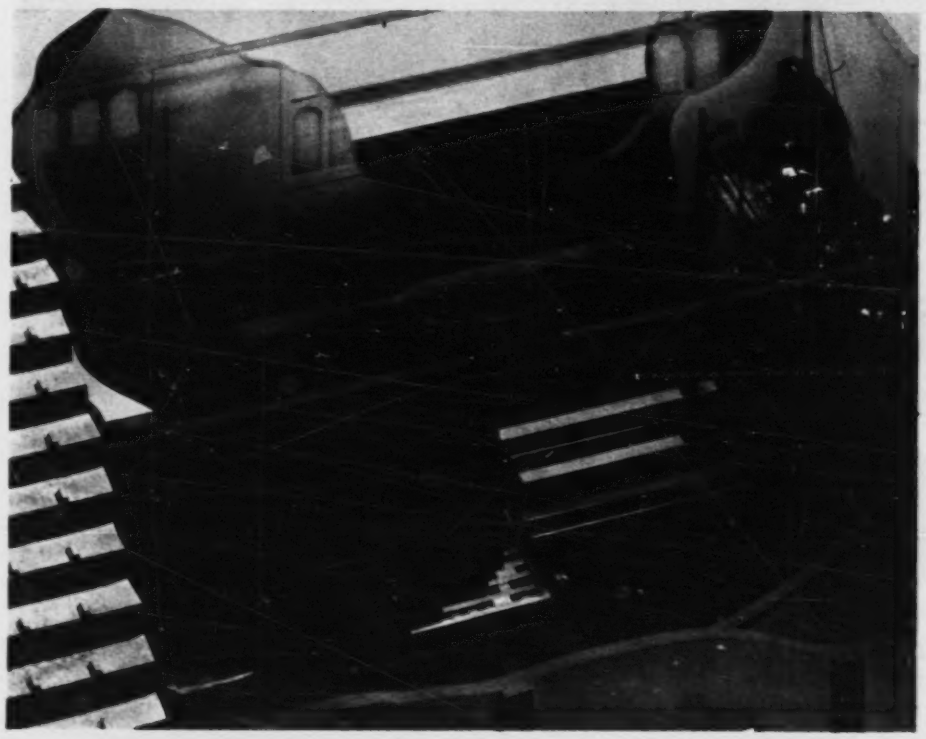
The Birth of the New Physics. I. Bernard Cohen. 1960. 200 pp. Doubleday, $1.25.

An account of Newton's formulation of classical physics that includes the historical events leading to this master stroke.

Breakthroughs in Physics. Peter Wolff (Ed.). 1965. 352 pp. New American Library, $0.75.

Seven physics immortals—Archimedes, Galileo, Pascal, Newton, Huygens, Von Helmholtz, and Einstein—tell the stories of their discoveries.

Laura and Enrico Fermi. In 1942 Fermi led the team of scientists who built the first nuclear reactor, a model of which is shown below.



This "hall of mirrors" helps physicists photograph tracks of nuclear particles passing through spark chambers. The dotted lines in the mirrors are particle tracks. Analysis of these tracks enables scientists to gather new information on the behavior and structure of matter.

City Under the Ice: The Story of Camp Century. Charles Michael Daugherty. 1963. 156 pp. Macmillan, $6.95. OP.

A popular-level, well-illustrated book describing Camp Century, a scientific research station directed toward opening the polar regions for human use. This army base, constructed under the ice 800 miles from the North Pole, used a nuclear reactor to provide power, heat, and light.

A Comprehensible World: On Modern Science and Its Origins. Jeremy Bernstein. 1967. 269 pp. Random House, $4.95.

This excellent collection of essays, book reviews, and profiles originally appeared in *The New Yorker.* Several of the outstanding ones include "A Question of Parity: T. D. Lee and C. N. Yang", "I am this Whole World: Erwin Schrodinger", and "Einstein and Bohr: A Debate".

Concepts and Development of Quantum Mechanics. John C. Slater. 1969. 322 pp. Dover, $3.00.

This discussion of the development of 20th century physics is designed for both scientists and laymen who are interested in modern physics as a chapter in the history of human thought. Mathematics is kept to a minimum.

Concise Dictionary of Atomics. Alfred Del Vecchio (Ed.). 1964. 262 pp. Philosophical Library, $6.00. OP.

This dictionary of terms also contains brief biographies of important research scientists in this field and descriptions of organizations that sponsor atomic research.

Concise Encyclopedia of the Atom. Paul Musset and Antonio Lloret. G. Wylie, editor and translator. 1968. 281 pp. Follett, $2.95.

These definitions and explanations, given in nontechnical language as much as possible, form an admirable guide to terms used in nuclear science.

Day of Trinity. Lansing Lamont. 1965. 333 pp. Atheneum, $6.95; New American Library, $0.75 (paperback).

A lively narrative by a *Time* correspondent focuses on the Los Alamos scientists who developed the nuclear device that was detonated at the Trinity site near Alamogordo, New Mexico, on July 16, 1945. This was the world's first nuclear explosion.

The Discovery of the Electron: The Development of the Atomic Concept of Electricity. David L. Anderson. 1964. 138 pp. Van Nostrand, $1.50.

This semitechnical book describes the experimental and conceptual developments that led to the discovery of the electron.

Education and the Atom. Glenn T. Seaborg and Daniel M. Wilkes. 1964. 150 pp. McGraw-Hill, $18.00 OP.

This book, which describes the role of the government in science education and information, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Many photographs.

Einstein: His Life and Times. Philipp Frank. 1953. 298 pp. Knopf, $5.00.

A brilliant biography that reveals the richness of Einstein's life and work and the tremendous impact he made upon physics.

The Electron: Its Isolation and Measurement and the Determination of Some of Its Properties. Robert Andrews Millikan. 1917 edition edited by Jesse W. M. DuMond and reissued in 1963. 268 pp. Chicago, $6.00 (hardback); $2.45 (paperback).

These researches won for Millikan the Nobel Prize for Physics in 1923. An introduction by an associate of the author puts the discoveries in perspective.

Elementary Particles. David H. Frisch and Alan M. Thorndike. 1964. 153 pp. Van Nostrand, $1.75.

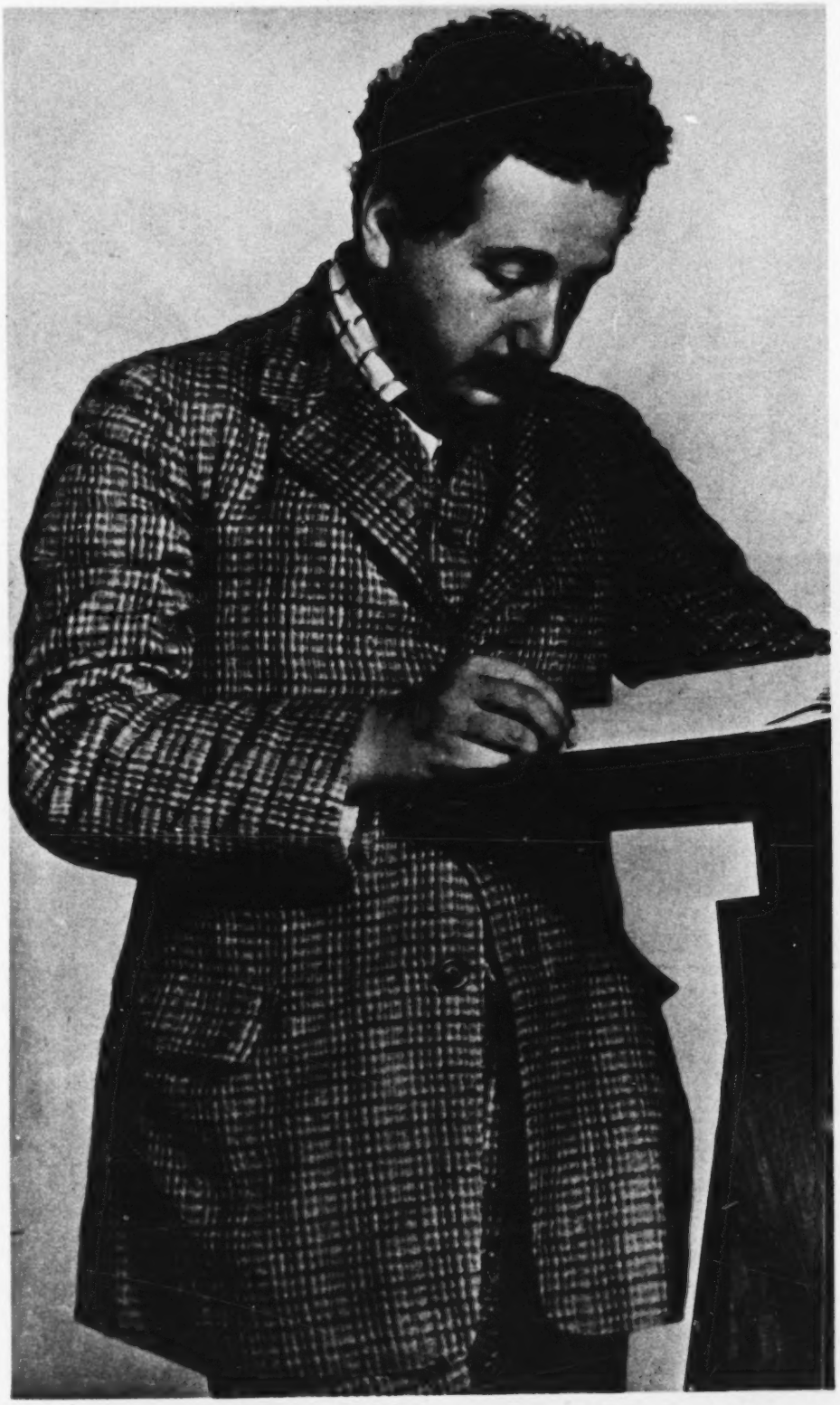
An account of the basic properties of particles and the experimental techniques used to study them.

Elementary Particles: A Short History of Some Discoveries in Atomic Physics. Chen Ning Yang. 1961. 65 pp. Princeton, $3.50.

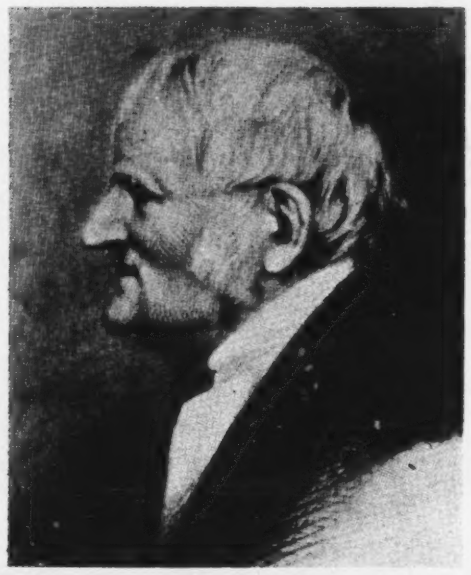
Dr. Yang was a co-winner of the Nobel Prize along with Dr. Tsung Dao Lee for suggesting the experiments that led to the downfall of the conservation of parity principle. Here he provides a general outline for laymen of the history of elementary particle research during the last 60 years.

The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta. Albert Einstein and Leopold Infeld. 1938. 302 pp. Simon, $4.95 (hardback); $1.75 (paperback).

Traces the steps from the mechanical view of the universe held by the classical physicists through subsequent developments that led to quantum mechanics.



Albert Einstein in 1905, the year he postulated his Special Theory of Relativity.



John Dalton

Sir Joseph J. Thomson and Lord Ernest Rutherford.

Fresh Water from Salty Seas. David O. Woodbury. 1967. 96 pp. Dodd, $3.50.

A well-illustrated and interesting account of desalination today with a section on nuclear energy applications.

Genetics in the Atomic Age. (2nd edition). Charlotte Auerbach. 1965. 111 pp. Oxford, $2.50.

A popular-level, well-written study of genetics and the effects of radiation.

The German Atomic Bomb: The History of Nuclear Research in Nazi Germany. David Irving. 1968. 329 pp. Simon, $6.95.

The German nuclear research program during the Second World War.

The Heart of the Atom: The Structure of the Atomic Nucleus. Bernard L. Cohen. 1967. 107 pp. Doubleday, $3.95 (hardback); $1.25 (paperback).

Describes all aspects of this "atomic heart": its structure, motion, radiation, and large-scale application.

Inside the Nucleus. Irving Adler. 1963. 192 pp. Day, $4.95 (hardback); New American Library, $0.60 (paperback).

An explanation of the structure of the atom and the amazing discoveries in recent years about its nucleus.

An Introduction to Physical Science: The World of Atoms. (2nd edition). John J. G. McCue. 1963. 775 pp. Ronald, $8.50.

This textbook was written for college humanities students.

Isotopes in Action. Dorothy Harper. 1963. 172 pp. Pergamon, $3.75.

Isotope use in industry, science, medicine, and agriculture is discussed in nontechnical language.

J. J. Thomson: Discoverer of the Electron. George Thomson. 1966. 240 pp. Doubleday, $1.45.

This biography, written by J. J. Thomson's son, describes his research at the famed Cavendish Laboratory in Cambridge, England.

John Dalton and the Atom. Frank Greenaway. 1966. 256 pp. Cornell, $6.95.

A biography for the general reader and the high school science student. Dalton is famous for his development of chemical combinations based on atomic theory. This provided the basis for modern structural theories of chemistry.

Manhattan Project. Stephane Groueff. 1967. 372 pp. Little, $6.95 (hardback); Bantam, $1.25 (paperback).

A very complete account of all branches of the wartime Manhattan Project, which culminated in the construction of the first atomic bomb.

Man-made Transuranium Elements. Glenn T. Seaborg. 1963. 120 pp. Prentice-Hall, $4.95 (hardback); $1.50 (paperback).

The discovery, properties, and applications of elements heavier than uranium are considered in this book, which is designed as an introduction to the subject.

Matter and Light: The New Physics. Louis Victor de Broglie. Translated by W. H. Johnston. 1939. 300 pp. Dover, $1.85.

These essays on physics, which include the author's Nobel Prize speech, were written by one of the pioneers in quantum mechanics.

Men and Atoms. William Lawrence. 1959. 302 pp. Simon, $4.50 (hardback); $1.45 (paperback).

A history of atomic pioneers and their work. American wartime development of the nuclear weapon and subsequent accomplishments of the peaceful atom are also discussed.

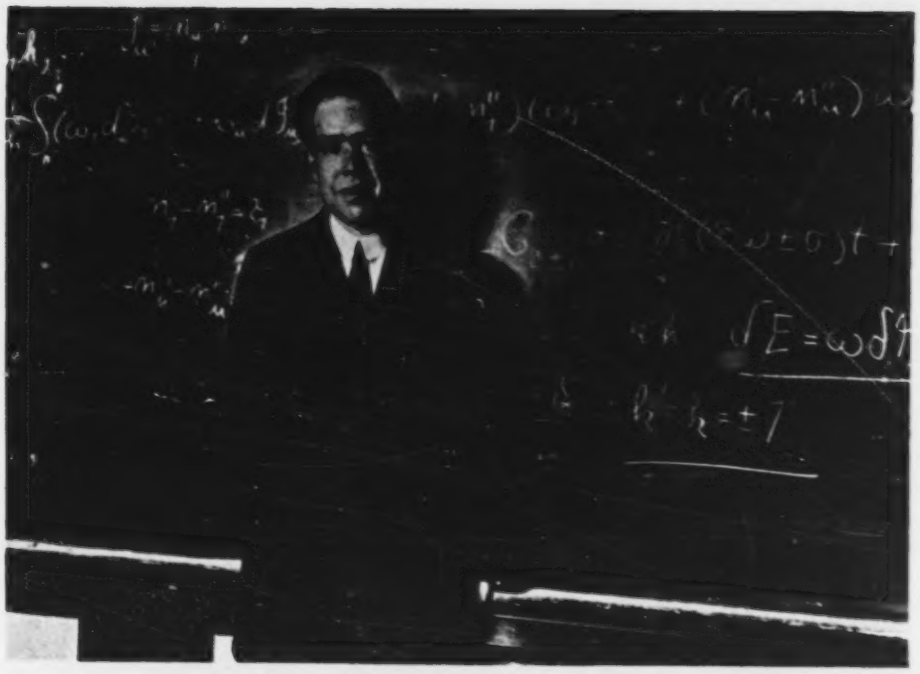
Men and Decisions. Lewis L. Strauss. 1962. 468 pp. Doubleday, $6.95.

One of the original members of the AEC, later its Chairman, recalls his experiences in a lifetime of public service.

The New World, 1939/1946. Volume I—History of the United States Atomic Energy Commission. Richard G. Hewlett and Oscar E. Anderson, Jr. 1962. 766 pp. Pennsylvania, $9.50. (This book and **Atomic Shield, 1947/1952** are available as a boxed set for $17.95.)

The achievements of the Manhattan Project, the formulation of national and international policy on atomic energy, and the legislative origins of the AEC.

The tank of this solar neutrino detector, located 4850 feet underground in the Homestake Gold Mine at Lead, South Dakota, contains 100,000 gallons of perchloroethylene.



Niels Bohr

Ernest O. Lawrence, Glenn T. Seaborg, and Robert Oppenheimer.

The Neutrino: Ghost Particle of the Atom. Isaac Asimov. 1966. 223 pp. Doubleday, $4.95 (hardback); Dell, $1.95 (paperback).

The author traces a century-long chain of events that proved, to the surprise of scientists, that a strange little particle called the neutrino actually exists and is produced in astronomical numbers inside the sun and other stars.

Newnes Concise Encyclopaedia of Nuclear Energy. D. E. Barnes et al., advisory editors. 1962. 886 pp. Wiley, $25.00. OP.

This encyclopedia is designed to be of use to both scientists and others. In addition to the nuclear items, entries are included from other technical fields with which nuclear energy is interrelated.

Niels Bohr: The Man, His Science, and the World They Changed. Ruth Moore. 1966. 436 pp. Knopf, $6.95.

An interesting biography of one of the pioneers in the study of the internal structure of the atom.

Now It Can Be Told: The Story of the Manhattan Project. Leslie R. Groves. 1962. 464 pp. Harper, $7.50.

The history of the wartime atomic energy effort as told by its director.

Nuclear Power, U. S. A. Walter H. Zinn, Frank K. Pittman, and John F. Hogerton. 1964. 200 pp. McGraw-Hill, $18.00. OP.

This book, which surveys the U. S. progress in the development of peaceful uses of atomic power, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Many photographs.

Nuclear Propulsion for Merchant Ships. A. W. Kramer. 1962. 600 pp. GPO, $2.25.

This source book was prepared for commercial shippers, port authorities, regulation officials, construction and design engineers, writers and other interested persons. A substantial portion of the book is devoted to discussions of the NS *Savannah*, the first commercial nuclear ship.

Nuclear Research. Albert V. Crewe and Joseph J. Katz. 1969. 215 pp. Dover, $2.95.

This book, which describes the scope and pace of nuclear research, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Many photographs, tables, and graphs.

Nuclear Weapons. Otto Berzins. 1967. 140 pp. Hart, $5.00.

An elementary explanation of nuclear energy is followed by descriptions of nuclear weapons, explosions, and their effects. The last chapter deals with protection from such explosions.

The Oak Ridge Story. George O. Robinson, Jr. 1959. 181 pp. Kingsport Press, $3.50. OP.

A nontechnical story about the city where enriched uranium was produced for the first nuclear weapons: selection of the site, construction of the facilities, and community life.

Oppenheimer. Robert Serber, Victor F. Weisskopf, Abraham Pais, and Glenn T. Seaborg. 1969. 128 pp. Scribner, $5.95.

Robert Oppenheimer's work as a scientist, teacher, and public servant is told in the personal recollections of his colleagues and friends. illustrated.

Otto Hahn: A Scientific Autobiography. Otto Hahn, Willy Ley, editor and translator. 1966. 320 pp. Scribner, $7.95.

Otto Hahn, winner of the 1944 Nobel Prize for his work in atomic fission, reviews the pioneer days in which a new science was created, and the role he played in its development.

Project Sherwood: The U. S. Program in Controlled Fusion. Amasa S. Bishop. 1958. 216 pp. Addison-Wesley, $7.50.

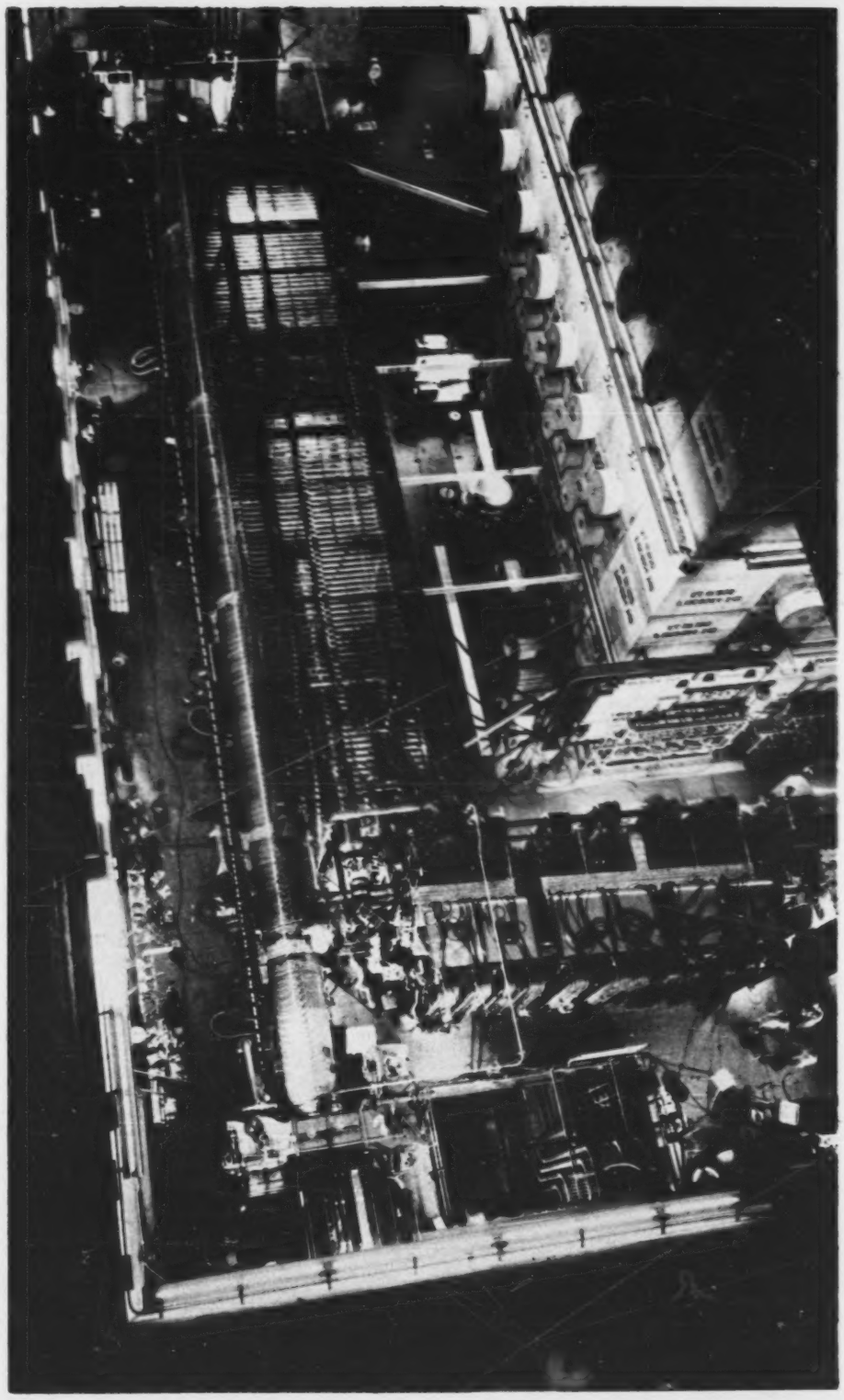
An account of the program in controlled nuclear reactions carried out by the U. S. Atomic Energy Commission during the period 1951–1958.

Radiation and Life. George E. Davis. 1967. 350 pp. Iowa, $6.50.

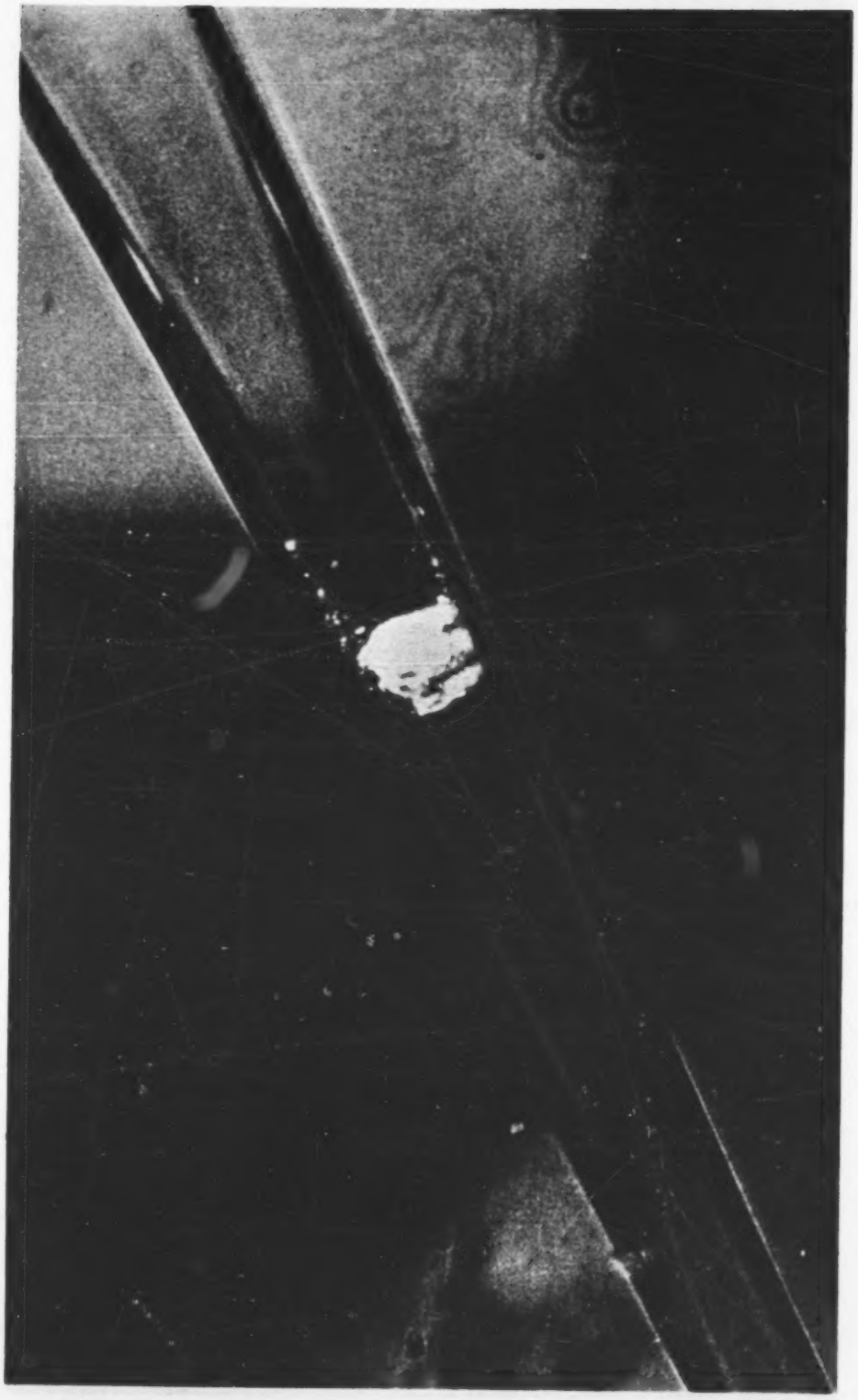
Introduces the student or layman to the principles of atomic physics and biology and their interplay, with emphasis on the impact of radiation on human and animal life.

Radiation, Genes, and Man. Bruce Wallace and Theodosius Dobzhansky. 1963. 127 pp. Holt, $6.50 (hardback); $2.50 (paperback).

A careful popular-level discussion on the genetic effects of radiation.



Enormous machines and complex equipment, such as the giant Astron facility shown above, are required for nuclear fusion research.



The first pure californium, magnified about 70 times, was isolated in 1960. The crystals are lodged in a capillary tube.

Radioisotopes and Radiation. John H. Lawrence, Bernard Manowitz, and Benjamin S. Loeb. 1969. 131 pp. Dover, $2.50.

This book, which surveys the major advances in the use of radioisotopes and radiation in medicine, agriculture, and industry, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Well illustrated.

Relativity for the Million. Martin Gardner. 1962. 182 pp. Macmillan, $6.95; Pocket Books, $0.95.

A popular introduction to a complex subject. Well illustrated. Includes a glossary and supplemental references.

The Science of Ionizing Radiation. Lewis E. Etter (Ed.). 1965. 804 pp. Thomas, $26.50.

A readable encyclopedic record that surveys the field from Roentgen's time to the present.

Sourcebook on Atomic Energy. (3rd edition). Samuel Glasstone. 1967. 883 pp. Van Nostrand, $9.25.

A standard reference work, written for both scientists and the public.

The Story of Quantum Mechanics. Victor Guillemin. 1968. 332 pp. Scribner, $7.95.

A complex subject is presented in a clear and fascinating way in this beautifully written book. Philosophical as well as scientific implications of quantum mechanics are discussed. A glossary and a well-annotated reference list are included.

Thirty Years That Shook Physics: The Story of Quantum Theory. George Gamow. 1966. 224 pp. Doubleday, $5.95 (hardback); $1.45 (paperback).

The development of the quantum theory presented in nontechnical language.

The Transuranium Elements. Glenn T. Seaborg. 1958. 328 pp. Yale, $7.00. OP.

This book, based on lectures delivered by the author at Yale in 1957, covers the plutonium story, chemical properties of the actinide elements, nuclear properties of the transuranium elements, and future synthetic elements.

Understanding Physics. 3 volumes. Isaac Asimov. 1966. 256 pp. each. Walker, $6.50 each; New American Library, $0.95 each (paperback).

Surveys the development and growth of the physical sciences in terms that the general reader can grasp. Volume I deals with motion, sound, and heat; Volume II with light, magnetism, and electricity; Volume III with the electron, proton, and neutron.

Universe, Earth and Atom: The Story of Physics. Dr. Alan E. Nourse. 1969. 640 pp. Harper, $8.95.

The progress of physics from the Greek philosophers through classical physicists to Einstein, dealing with the tools of physics, methods of discovery, electricity, magnetism, light, general relativity, the puzzle of time, the birth of galaxies and planets, radioactivity, energy quanta, lasers, and many other subjects.

The World of Elementary Particles. Kenneth W. Ford. 1963. 262 pp. Blaisdell, $2.95.

A brief and simple presentation of this field.

The World of the Atom. 2 volumes. Henry A. Boorse and Lloyd Matz (Eds.). 1966. 1873 pp. Basic Books, $35.00.

Contains the actual text of landmark documents in the history of atomic physics, each preceded by commentary that places it in the context of the discoverer's personal life and in the conditions prevailing in science and in society in his time.

Worlds–Antiworlds: Antimatter in Cosmology. Hannes Alfvén. 1966. 103 pp. Freeman, $3.50.

This presentation elucidates the new theory of the universe based on atom-smashing experiments that reveal symmetry in the production of particles and antiparticles. This new cosmology is based on the complete symmetry between matter and antimatter.

Author Index

ADLER, Irving
Inside the Nucleus, 29

ADLER, Irving and Ruth
Atoms and Molecules, 6

ALFVÉN, Hannes
Worlds—Antiworlds: Antimatter in Cosmology, 38

ANDERSON, David L.
The Discovery of the Electron: The Development of the Atomic Concept of Electricity, 26

ANDERSON, Oscar E. Jr.
(see Hewlett)

ANDERSON, William R., James Baar, and William E. Howard
Atomic Submarines, 5

ANDERSON, William R., and Vernon Pizer
The Useful Atom, 18

ANDRADE, Edward N. da C.
Rutherford and the Nature of the Atom, 17

ASIMOV, Isaac
Building Blocks of the Universe, 9
Inside the Atom, 10
The Neutrino: Ghost Particle of the Atom, 33
The Noble Gases, 14
Understanding Physics, 38

AUERBACH, Charlotte
Genetics in the Atomic Age, 29

BAAR, James
(see Anderson, William R.)

BARNES, D. E., et al.
Newnes Concise Encyclopaedia of Nuclear Energy, 33

BEELER, Nelson F., and Franklyn M. Branley
Experiments with Atomics, 10

BENTINCK, Henry
Anyone Can Understand the Atom, 21

BERGER, Melvin
Atoms, 6

BERNSTEIN, Jeremy
A Comprehensible World: On Modern Science and Its Origins, 25

BERZINS, Otto
Nuclear Weapons, 34

BISHOP, Amasa S.
Project Sherwood: The U. S. Program in Controlled Fusion, 34

BLOW, Michael
The History of the Atomic Bomb, 10

BOHR, Niels
Atomic Physics and Human Knowledge, 21

BOORSE, Henry A., and Lloyd Matz
The World of the Atom, 38

BRANLEY, Franklyn M.
(see Beeler)

CHASE, Grafton D., Stephen Rituper, and John W. Sulconki
Experiments in Nuclear Science, 10

CLINE, Barbara Lovett
The Questioners: Physicists and Quantum Theory, 14

COHEN, Bernard L.
The Heart of the Atom: The Structure of the Atomic Nucleus, 29

COHEN, I. Bernard
The Birth of the New Physics, 22

COLBY, C. B.
The Atom at Work: How Nuclear Power Can Benefit Man, 5

COMPTON, Arthur H.
Atomic Quest, 22

CREWE, Albert V., and Joseph J. Katz
Nuclear Research, 33

DAUGHERTY, Charles Michael
City Under the Ice: The Story of Camp Century, 25

DAVIS, George E.
Radiation and Life, 34

DE BROGLIE, Louis Victor
Matter and Light: The New Physics, 30

DEL VECCHIO, Alfred
Concise Dictionary of Atomics, 25

DE VRIES, Leonard
The Book of the Atom, 9

DIBNER, Bern
Wilhelm Röntgen and the Discovery of X Rays, 18

DOBZHANSKY, Theodosius
(see Wallace)

DUKERT, Joseph M.
Atompower, 6

DUNCAN, Francis
(see Hewlett)

EINSTEIN, Albert, and Leopold Infeld
The Evolution of Physics: The Growth of Ideas from Early Concepts to Relativity and Quanta, 26

ESTERER, Arnulf K.
Discoverer of X Rays: Wilhelm Conrad Roentgen, 9

ETTER, Lewis E.
The Science of Ionizing Radiation, 37

FABER, Doris
Enrico Fermi: Atomic Pioneer, 9

FERMI, Laura
Atoms in the Family: My Life with Enrico Fermi, 22

FORD, Kenneth W.
The World of Elementary Particles, 38

FRANK, Philipp
Einstein: His Life and Times, 26

FRISCH, David H., and Alan M. Thorndike
Elementary Particles, 26

FRISCH, Otto R.
Working with Atoms, 18

GAMOW, George
The Atom and Its Nucleus, 21
Mr. Tomkins Explores the Atom, 13
Thirty Years That Shook Physics: The Story of Quantum Theory, 37

GARDNER, Martin
Relativity for the Million, 37

GLASSTONE, Samuel
Sourcebook on Atomic Energy, 37

GOODFIELD, June
(see Toulmin)

GREENAWAY, Frank
John Dalton and the Atom, 30

GREY, Vivian
Secret of the Mysterious Rays: The Discovery of Nuclear Energy, 17

GROUEFF, Stephane
Manhattan Project, 30

GROVES, Leslie R.
Now It Can Be Told: The Story of the Manhattan Project, 33

GUILLEMIN, Victor
The Story of Quantum Mechanics, 37

HABER, Heinz
Our Friend the Atom, 14

HAHN, Otto
Otto Hahn: A Scientific Autobiography, 34

HARPER, Dorothy
Isotopes in Action, 29

HECKMAN, H. H., and P. W. Starring
Nuclear Physics and the Fundamental Particles, 14

HERMIAS, Sister Mary, and Sister Mary Joecile
Radioactivity: Fundamentals and Experiments, 17

HEWLETT, Richard G., and Francis Duncan
Atomic Shield, 1947/1952. Volume II—History of the United States Atomic Energy Commission, 22

HEWLETT, Richard G., and Oscar E. Anderson, Jr.
The New World, 1939/1946. Volume I–History of the United States Atomic Energy Commission, 30

HOGERTON, John F.
The Atomic Energy Deskbook, 21
(see Zinn)

HOWARD, William E.
(see Anderson, William R.)

HUGHES, Donald J.
The Neutron Story, 13

HYDE, Margaret O.
Atoms Today and Tomorrow, 6

INFELD, Leopold
(see Einstein)

IRVING, David
The German Atomic Bomb: The History of Nuclear Research in Nazi Germany, 29

JAWORSKI, Irene D., and Alexander Joseph
Atomic Energy, 5

JOECILE, Sister Mary
(see Hermias)

JOSEPH, Alexander
(see Jaworski)

KATZ, Joseph J.
(see Crewe)

KOHN, Bernice
The Peaceful Atom, 14

KRAMER, A. W.
Nuclear Propulsion for Merchant Ships, 33

LAMONT, Lansing
Day of Trinity, 25

LAPP, Ralph E.
Roads to Discovery, 17

LARSEN, Egon
Atoms and Atomic Energy, 6

LAWRENCE, John H., Bernard Manowitz, and Benjamin S. Loeb
Radioisotopes and Radiation, 37

LAWRENCE, William
Men and Atoms, 30

LEEDS, Roslyn
Introducing the Atom, 13

LEVINGER, Joseph S.
Secrets of the Nucleus, 18

LEY, Willy
The Discovery of the Elements, 9

LITTAUER, Raphael
(see Wilson)

LLORET, Antonio
(see Musset)

LOEB, Benjamin S.
(see Lawrence, John H.)

McCUE, John J. G.
An Introduction to Physical Science: The World of Atoms, 29

McKOWN, Robin
The Fabulous Isotopes: What They Are and What They Do, 10
Giant of the Atom: Ernest Rutherford, 10

MANN, Martin
Peacetime Uses of Atomic Energy, 14

MANOWITZ, Bernard
(see Lawrence, John H.)

MASSEY, Harrie S. W., and Arthur R. Quinton
Basic Laws of Matter, 6

MATZ, Lloyd
(see Boorse)

MILLIKAN, Robert Andrews
The Electron: Its Isolation and Measurement and the Determination of Some of Its Properties, 26

MOORE, Ruth
Niels Bohr: The Man, His Science, and the World They Changed, 33

MUSSET, Paul, and Antonio Lloret
Concise Encyclopedia of the Atom, 25

NOURSE, Dr. Alan E.
Universe, Earth and Atom: The Story of Physics, 38

PAIS, Abraham
(see Serber)

PITTMAN, Frank K.
(see Zinn)

PIZER, Vernon
(see Anderson, William R.)

POLKING, Kirk
Let's Go to an Atomic Energy Town, 13

POTTER, Robert D. and Robert C.
Young People's Book of Atomic Energy, 18

QUINTON, Arthur R.
(see Massey)

RADLAUER, Edward and Ruth S.
Atoms Afloat: The Nuclear Ship *Savannah*, 6

RITUPER, Stephen
(see Chase)

ROBINSON, George O. Jr.
The Oak Ridge Story, 34

ROMER, Alfred
The Restless Atom, 17

ROSS, Frank Jr.
Superpower: The Story of Atomic Energy, 18

SCHONLAND, Basil
The Atomists, 22

SEABORG, Glenn T.
Man-made Transuranium Elements, 30
The Transuranium Elements, 37
(see Serber)

SEABORG, Glenn T., and Daniel M. Wilkes
Education and the Atom, 26

SEABORG, Glenn T., and Evans G. Valens
Elements of the Universe, 9

SERBER, Robert, Victor F. Weisskopf, Abraham Pais, and Glenn T. Seaborg
Oppenheimer, 34

SHILLING, Charles W.
Atomic Energy Encyclopedia in the Life Sciences, 21

SILVERBERG, Robert
Men Who Mastered the Atom, 13
Niels Bohr: The Man Who Mapped the Atom, 13

SLATER, John C.
Concepts and Development of Quantum Mechanics, 25

SMITH, E. Sheldon
The Atom and Beyond: A New Introduction to Modern Physical Science, 5

SMYTH, Henry D.
Atomic Energy for Military Purposes, 21

STARRING, P. W.
(see Heckman)

STRAUSS, Lewis L.
Men and Decisions, 30

SULCONKI, John W.
(see Chase)

THOMSON, George
J. J. Thomson: Discoverer of the Electron, 29

THORNDIKE, Alan M.
(see Frisch, David H.)

TOULMIN, Stephen, and June Goodfield
The Architecture of Matter, 21

VALENS, Evans G.
(see Seaborg)

VICTOR, Edward
Molecules and Atoms, 13

WALLACE, Bruce, and Theodosius Dobzhansky
Radiation, Genes, and Man, 34

WEEKS, Mary E.
Discovery of the Elements, 9

WEISSKOPF, Victor F.
(see Serber)

WILKES, Daniel M.
(see Seaborg)

WILSON, Robert R., and Raphael Littauer
Accelerators: Machines of Nuclear Physics, 5

WOLFF, Peter
Breakthroughs in Physics, 22

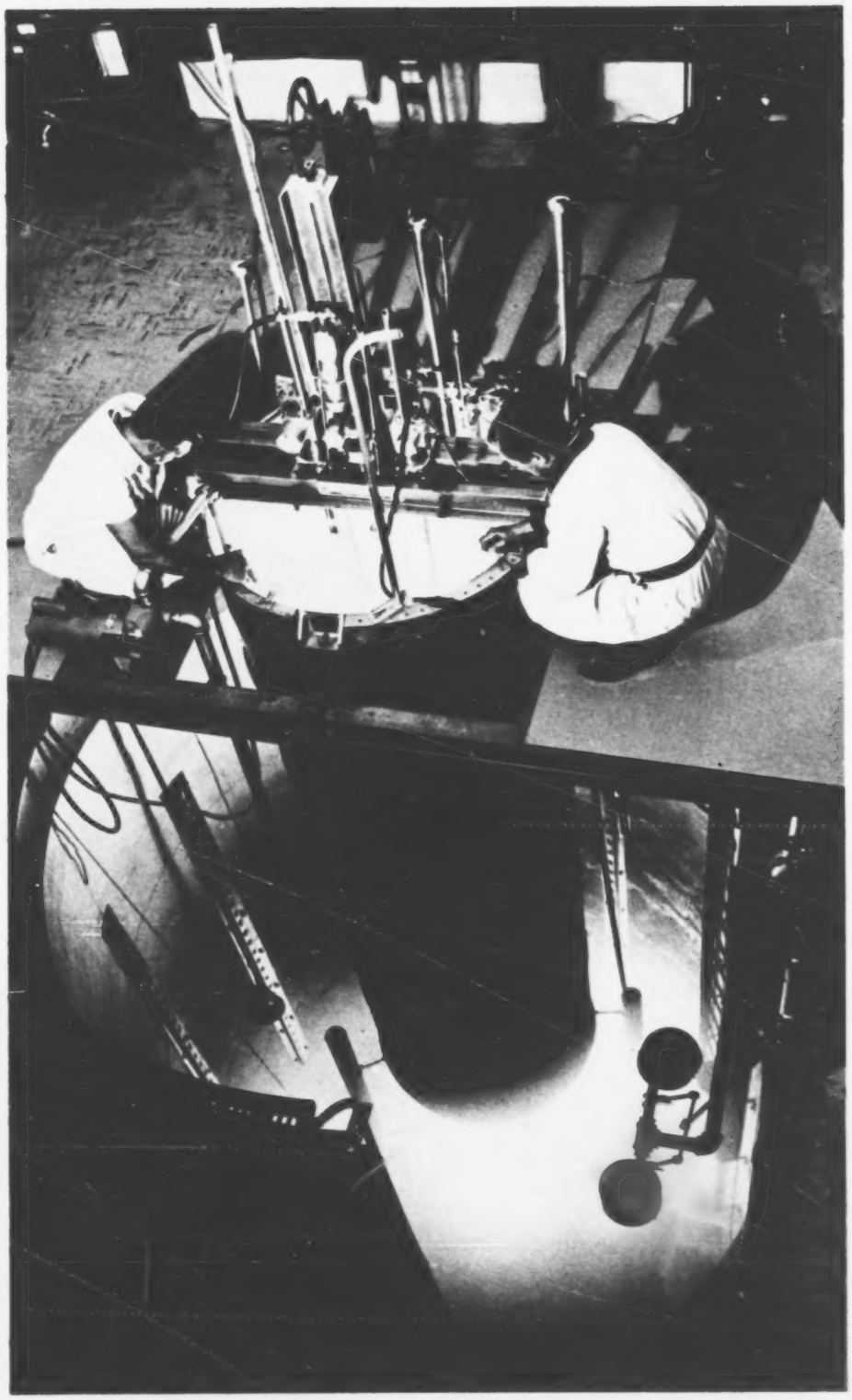
WOODBURN, John H.
Radioisotopes, 17

WOODBURY, David O.
Atoms for Peace, 22
Fresh Water from Salty Seas, 29

YANG, Chen Ning
Elementary Particles: A Short History of Some Discoveries in Atomic Physics, 26

ZINN, Walter H., Frank K. Pittman, and John F. Hogerton
Nuclear Power, U.S.A., 33

Arc melting is a step in the fabrication of uranium carbide fuel elements, which are used in nuclear reactors.



A pulsing reactor emits a bright blue flash at the instant of intense radiation.

Publishers

AAAS
American Association for the Advancement of Science
1515 Massachusetts Avenue N.W.
Washington, D. C. 20005

ALA
American Library Association
50 East Huron Street
Chicago, Illinois 60611

ABELARD-SCHUMAN
Abelard-Schuman, Ltd.
6 West 57 Street
New York, N. Y. 10019

ADDISON-WESLEY
Addison-Wesley Publishing Company Inc.
Reading, Massachusetts 01867

AMERICAN HERITAGE
American Heritage Publishing Company, Inc.
551 Fifth Avenue
New York, N. Y. 10017

ATHENEUM
Atheneum Publishers
122 East 42 Street
New York, N. Y. 10017

BANTAM
Bantam Books, Inc.
666 Fifth Avenue
New York, N. Y. 10019

BARRON'S
Barron's Educational Series, Inc.
113 Crossways Park Drive
Woodbury, N. Y. 11797

BASIC BOOKS
Basic Books, Inc., Publishers
404 Park Avenue South
New York, N. Y. 10016

BLAISDELL
Blaisdell Publishing Company
275 Wyman Street
Waltham, Massachusetts 02154

BURGESS
Burgess Publishing Company
426 South 6 Street
Minneapolis, Minnesota 55415

CAMBRIDGE
Cambridge University Press
32 East 57 Street
New York, N. Y. 10022

CHEMICAL EDUCATION
Chemical Education Publishing Company
20th and Northampton Streets
Easton, Pennsylvania 18042

CHICAGO
University of Chicago Press
5750 Ellis Avenue
Chicago, Illinois 60637

CHILDRENS PRESS
Childrens Press
1224 West Van Buren Street
Chicago, Illinois 60607

CORNELL
Cornell University Press
124 Roberts Place
Ithaca, New York 14850

COWARD-McCANN
Coward-McCann, Inc.
200 Madison Avenue
New York, N. Y. 10016

CROWELL
Crowell Collier and Macmillan, Inc.
866 Third Avenue
New York, N. Y. 10022

DAY
The John Day Company, Inc.
62 West 45 Street
New York, N. Y. 10036

DELACORTE
The Delacorte Press
750 Third Avenue
New York, N. Y. 10017

DELL
Dell Publishing Company, Inc.
750 Third Avenue
New York, N. Y. 10017

DODD
Dodd, Mead and Company
79 Madison Avenue
New York, N. Y. 10016

DOUBLEDAY
Doubleday and Company, Inc.
277 Park Avenue
New York, N. Y. 10017

DOVER
Dover Publications, Inc.
180 Varick Street
New York, N. Y. 10014

DUTTON
E. P. Dutton and Company, Inc.
201 Park Avenue South
New York, N. Y. 10003

FOLLETT
Follett Publishing Company
201 North Wells Street
Chicago, Illinois 60606

FREEMAN
W. H. Freeman and Company,
Publishers
660 Market Street
San Francisco, California 94104

GOLDEN PRESS
Golden Press, Inc.
850 Third Avenue
New York, N. Y. 10022

GPO
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

HALE
E. M. Hale and Company
1201 South Hastings Way
Eau Claire, Wisconsin 54701

HARCOURT
Harcourt, Brace and World, Inc.
757 Third Avenue
New York, N. Y. 10017

HARPER
Harper and Row, Publishers
49 East 33 Street
New York, N. Y. 10016

HART
Hart Publishing Company, Inc.
510 Avenue of the Americas
New York, N. Y. 10011

HERALD
Herald Books
P. O. Box 63
Bronxville, New York 10710

HOLIDAY
Holiday House, Inc.
18 East 56 Street
New York, N. Y. 10022

HOLT
Holt, Rinehart and Winston, Inc.
383 Madison Avenue
New York, N. Y. 10017

IOWA
Iowa State University Press
Press Building
Ames, Iowa 50010

KNOPF
Alfred A. Knopf, Inc.
201 East 50 Street
New York, N. Y. 10022

LIPPINCOTT
J. B. Lippincott Company
East Washington Square
Philadelphia, Pennsylvania 19105

LITTLE
Little, Brown and Company
34 Beacon Street
Boston, Massachusetts 02106

LOTHROP
Lothrop, Lee and Shepard
Company, Inc.
381 Park Avenue South
New York, N. Y. 10016

MACMILLAN
The Macmillan Company
866 Third Avenue
New York, N. Y. 10022

MACRAE
MacRae Smith Company
225 South 15th Street
Philadelphia, Pennsylvania 19102

McGRAW-HILL
McGraw-Hill Book Company
330 West 42 Street
New York, N. Y. 10036

MESSNER
Julian Messner
1 West 39 Street
New York, N. Y. 10018

NEW AMERICAN LIBRARY
New American Library, Inc.
1301 Avenue of the Americas
New York, N. Y. 10019

NSTA
National Science Teachers Association
1201 Sixteenth Street N.W.
Washington, D. C. 20036

OXFORD
Oxford University Press, Inc.
200 Madison Avenue
New York, N. Y. 10016

PENNSYLVANIA
The Pennsylvania State University Press
University Press Building
University Park, Pennsylvania 16802

PERGAMON
Pergamon Press, Inc.
Maxwell House
Fairview Park
Elmsford, N. Y. 10523

PETER SMITH
Peter Smith
6 Lexington Avenue
Gloucester, Massachusetts 01932

PHILOSOPHICAL LIBRARY
Philosophical Library, Inc.
15 East 40 Street
New York, N. Y. 10016

POCKET BOOKS
Pocket Books
630 Fifth Avenue
New York, N. Y. 10020

PRENTICE-HALL
Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

PRINCETON
Princeton University Press
Princeton, New Jersey 08540

PUTNAM
G. P. Putnam's Sons
200 Madison Avenue
New York, N. Y. 10016

RANDOM HOUSE
Random House, Inc.
201 East 50 Street
New York, N. Y. 10022

REINHOLD
Reinhold Publishing Corporation
450 West 33 Street
New York, N. Y. 10001

RONALD
The Ronald Press Company
79 Madison Avenue
New York, N. Y. 10016

ROY
Roy Publishers, Inc.
30 East 74 Street
New York, N. Y. 10021

SAUNDERS
W. B. Saunders Company
West Washington Square
Philadelphia, Pennsylvania 19105

SCRIBNER
Charles Scribner's Sons
597 Fifth Avenue
New York, N. Y. 10017

SIMON
Simon and Schuster, Inc.
630 Fifth Avenue
New York, N. Y. 10020

THOMAS
Charles C Thomas, Publisher
301-327 East Lawrence Avenue
Springfield, Illinois 62703

VAN NOSTRAND
Van Nostrand Reinhold Company
450 West 33 Street
New York, N. Y. 10001

VIKING
The Viking Press
625 Madison Avenue
New York, N. Y. 10022

WALKER
Walker and Company
720 Fifth Avenue
New York, N. Y. 10019

WATTS
Franklin Watts, Inc.
575 Lexington Avenue
New York, N. Y. 10022

WILEY
John Wiley and Sons, Inc.
605 Third Avenue
New York, N. Y. 10016

WORLD
The World Publishing Company
110 East 59 Street
New York, N. Y. 10022

YALE
Yale University Press
149 York Street
New Haven, Connecticut 06511

This booklet is one of the "Understanding the Atom" Series. Comments are invited on this booklet and others in the series; please send them to the Division of Technical Information, U. S. Atomic Energy Commission, Washington, D. C. 20545.

Published as part of the AEC's educational assistance program, the series includes these titles:

Accelerators
Animals in Atomic Research
Atomic Fuel
Atomic Power Safety
Atoms at the Science Fair
Atoms in Agriculture
Atoms, Nature, and Man
Books on Atomic Energy for Adults and Children
Careers in Atomic Energy
Computers
Controlled Nuclear Fusion
Cryogenics, The Uncommon Cold
Direct Conversion of Energy
Fallout From Nuclear Tests
Food Preservation by Irradiation
Genetic Effects of Radiation
Index to the UAS Series
Lasers
Microstructure of Matter
Neutron Activation Analysis
Nondestructive Testing
Nuclear Clocks
Nuclear Energy for Desalting
Nuclear Power and Merchant Shipping
Nuclear Power Plants
Nuclear Propulsion for Space
Nuclear Reactors
Nuclear Terms, A Brief Glossary
Our Atomic World
Plowshare
Plutonium
Power from Radioisotopes
Power Reactors in Small Packages
Radioactive Wastes
Radioisotopes and Life Processes
Radioisotopes in Industry
Radioisotopes in Medicine
Rare Earths
Research Reactors
SNAP, Nuclear Space Reactors
Sources of Nuclear Fuel
Space Radiation
Spectroscopy
Synthetic Transuranium Elements
The Atom and the Ocean
The Chemistry of the Noble Gases
The Elusive Neutrino
The First Reactor
The Natural Radiation Environment
Whole Body Counters
Your Body and Radiation

A single copy of any one booklet, or of no more than three different booklets, may be obtained free by writing to:

USAEC, P. O. BOX 62, OAK RIDGE, TENNESSEE 37830

Complete sets of the series are available to school and public librarians, and to teachers who can make them available for reference or for use by groups. Requests should be made on school or library letterheads and indicate the proposed use.

Students and teachers who need other material on specific aspects of nuclear science, or references to other reading material, may also write to the Oak Ridge address. Requests should state the topic of interest exactly, and the use intended.

In all requests, include "Zip Code" in return address.

Printed in the United States of America

USAEC Division of Technical Information Extension, Oak Ridge, Tennessee